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NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Other communications relating to advertisements or general matters should be addressed to the Manager.

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The Second Year

WITH this issue THE CHEMICAL AGE enters upon its second year. It has been a year of exceptional difficulty in the publishing world, owing to paper shortage and the increasing cost of printing, postage and other charges, but our progress has been consistent from the first issue, and to-day the journal has an established place in the chemical industry. This success has been attained without any perceptible damage to any previously existing interest, though our advent was viewed in some quarters with anxiety and even alarm. Our purpose has been not to damage others but to meet a need that was not fully satisfied before, and it is clear that in so early achieving this object THE CHEMICAL AGE has had a stimulating influence on other publications. The result is a general gain to the industry.

With the developments now contemplated the need for a fuller representation of chemical science and industry in the life of the country grows rather than diminishes. The nation has known too little in the past of what its industrial life owes to chemistry, pure and applied, and the branches into which the great chemical profession is divided have, perhaps, known

too little of one another and have not quite realised the total contribution they make to national prosperity. THE CHEMICAL AGE has perceptibly added to the work done in these directions by existing publications, and the kindly messages we have received on the successful completion of the first year from readers in this country, on the Continent, and in the United States, show how far we have already taken a definite place in the industry. To all those who have helped to make this success possible we tender our sincere thanks, and it will be our purpose to make THE CHEMICAL AGE increasingly worthy of the confidence and friendship it has attracted from such a wide constituency.

It may be added that our New York contemporary, *Chemical Age*, which started its career about the same time as ourselves, has effected an amalgamation with *The Chemical Engineer*. The journal retains the name and the services of the editor, Mr. Lloyd Lamborn. The first issue of the combined journals is an excellent one, and promises well for the future.

A New Source of Potash

FROM Denver (Col.) comes the news that a new potash industry is being established, production being effected by the electrolytic decomposition of feldspar and leucite. According to the current number of *The Times Engineering Supplement*, an abundant supply of the raw material is to be found within 20 miles of Denver, and is capable of being mined in the open by the bench method, which materially reduces the cost. Apparently, too, some promising developments are likely to take place in the way of by-products, and it is said that a plant capable of producing 300 tons of potash will give, as by-products, 165 tons of aluminium oxide and 700 tons of silica, the latter being a material which will probably be welcomed by the ceramic industry.

The rock is crushed to about 60 mesh, decomposed in digesting pans, and electrolysed in special earthenware cells to potassium aluminate, with an accompanying complete segregation of the silicon. The special diaphragm cell is the crux of the process. The porous pot contains the cathode, which is immersed in water contained within the diaphragm. Surrounding this and enclosed in the cell-body itself is a sulphuric acid solution of decomposed feldspar, in which the anode is immersed. The passage of current ionises the solution, and the alkali and the aluminium travel through the diaphragm to form potassium aluminate at the cathode, while the amorphous silicon remains as a sludge around the cathode. The action of the carbon dioxide present breaks down the aluminate, with the resulting formation of aluminium hydrate and potassium carbonate, the latter remaining in solution, while the hydrate is precipitated. The solution is decanted, and the remaining aluminium hydrate is washed and dried, by an atomising process.

The potash solution is now in a state for the production of any desired commercial salt. At present the production of 100 per cent. soluble potassium sulphate is desired, and this is secured by digestion with gypsum, whereby a pure carbonate is precipitated. The by-products are obtained from the large quantity of amorphous silica which is recovered from the electrolyte. The aluminium compounds are obtained from the silica.

The Problem of Peat Utilisation

So much has been heard of Irish peat and the possibilities which underlie its use as a fuel and so many unsuccessful attempts to develop it commercially have resulted in failure, that it is refreshing to have an official report on the whole matter. When coal and other fuels were comparatively cheap the lower grade combustibles were of far less value than is the case to-day. In other words, if peat cannot be developed successfully at the present time it is questionable whether it can ever be. The Fuel Research Board has recently published a special report on the Irish resources which has been compiled by Professor Purcell. It is shown that the principal difficulty is that of water, undrained peat bog containing from 90 to 95 per cent. This water cannot practically be separated by pressure below 70 per cent., ordinary air-drying will bring it down to 25 per cent.; and if, when heat is applied, the proportion is reduced below 16 per cent., the product rapidly reabsorbs moisture from the atmosphere up to the same extent. For use in producers, however, the water percentage may be so high as 33 per cent., while an excellent direct fuel (having a calorific value about half that of coal) is obtained when the moisture is 25 per cent. The most obvious application is as a fuel for power production, and the best method thermally, according to Professor Purcell, is that of burning the air-dried peat under water-tube boilers, and driving turbines with steam.

A successful example of the direct use of solid peat has been reported in Sweden, where peat air-dried to 40 per cent. moisture has been dried artificially to from 12 to 15 per cent. moisture and used with automatic stokers on locomotives with economical results. A large station (5,000 H.P.) has been erected and is working in Germany at Wiesmoor (Friesland), where the peat is burned in a boiler furnace with a step-grate, and a thermal efficiency of 74 per cent. is said to have been obtained. The steam is used in turbo-generators, and the peat consumption has sometimes been as low as 5½ lb. per kilowatt-hour. About 30,000 tons of peat per year are said to be used, mostly machine cut, and the plant has now been increased to 9,000 H.P. This is not the largest power installation run by peat, there being one in the neighbourhood of Moscow of a capacity of 10,000 kw. The peat there is burned under water-tube boilers.

Industrial Fellowships

THE account which Mr. Raymond F. Bacon, director of the Mellon Institute of Industrial Research, has just issued of the industrial fellowship system founded by the late Dr. Duncan in 1906, should be of interest now that so many commercial firms are recognising the importance of research and desire special investigation

into their own problems. According to this system of research any industrialist or company or group of manufacturers having a problem or series of problems to be dealt with may contribute to the Institute a sum of money for not less than one year. This foundation sum must cover the purchase of all necessary special apparatus as well as the annual stipends of the research staff. The Institute selects an Industrial Fellow for the purpose required, places its equipment and resources at his disposal, and gives assistance in the work. The results obtained belong to the donor, though reports of general scientific interest are published, and the Institute itself neither seeks nor gets any advantage for itself. It is not claimed for it that it is the ideal method of research, but it has served a useful purpose, and has done much to convince American manufacturers of the vital importance of research to industry.

That the system is appreciated is shown by the figures respecting its growth. Since March 1, 1919, when there were 47 Industrial Fellowships, there has been material growth both in the number of Fellows and in the amounts subscribed for their support. Several additional Fellowships will be instituted as soon as the necessary facilities can be provided. In America apparently for some few years past there has been a real scarcity of men of demonstrated research ability, and the Mellon Institute adheres to the policy of starting new work only as competent men are available. The following table represents the number of Industrial Fellowships founded in the Institute from March to March of each year 1911 to 1920:—

	Fellowships.		Fellows.		Foundation Sums	
1911-1912	11	.....	24	.....	\$39,700
1912-1913	16	.....	30	.....	54,300
1913-1914	21	.....	37	.....	78,400
1914-1915	21	.....	32	.....	61,200
1915-1916	36	.....	63	.....	126,800
1916-1917	42	.....	65	.....	149,100
1917-1918	42	.....	64	.....	172,000
1918-1919	47	.....	77	.....	238,245
1919-1920	47	.....	83	.....	293,680

The total amount of money contributed by industrial firms to the Institute for the nine years ending March 1, 1920, was \$1,213,425. During that period the Institute itself expended approximately \$400,000 in taking care of overhead expenses in connection with the operation of the Industrial Fellowships. Besides this amount the building and permanent equipment of the Institute, which make it the most complete and modern industrial experiment station in the United States, represent an investment of about \$350,000. In addition, an amount of money now running into several million dollars has been spent by the industries in developing into large scale manufacture various processes worked out at the Institute.

The subjects investigated cover a very wide range, mainly chemical and metallurgical, and the published results, though they are not supposed to disclose the processes or methods of a particular company, make available for the use of the various industries any new discoveries of scientific fact. Thus while the individual needs of the donors are met industrial science as a whole benefits. The reports of researches published since 1912 constitute a valuable library of scientific and technological studies, and in the pooling of know-

ledge they have done much to improve the conditions of American industry.

The Subscription Problem

THE financial problem which the Society of Chemical Industry is now facing is exactly the same as that which troubles other institutions and individual members of them. The Society's balance-sheet for 1918 showed for the first time a serious loss on the year's working, and this, we learn, has been repeated in respect of the last financial year. It is not due to any decline of support, for the Society of late has been putting increased energy into its work. It is due mainly to the increased charges for printing and publishing, which, it may be, have even yet not reached the maximum, and to the fact that the income practically remains the same. The Society's printing and publishing account, for example, is stated to be approximately four times what it was in 1914, the cost of paper is five times greater, and the cost of postage has doubled.

Since the Society cannot go on living on its reserves, it has but two ways of meeting the difficulty. Either it must cut down its expenditure, which means limiting some of its most useful activities, or it must raise the subscription fee. It has had the courage to take the latter course, and when they appreciate the circumstances we believe the members will loyally support the Council in their decision. The proposal is to raise the annual subscription from 30s. to 50s. as from January 1, 1921, and when one considers what is paid to clubs and other associations one cannot regard even the new figure as excessive in view of the personal advantages which members receive, and of the collective good which the chemical industry itself derives. Most of the members can spare the extra pound without fear of privation, and the only class likely to be seriously affected are the younger members, who subsist on those too slender salaries of which so much has lately been heard. The Council, attaching great importance to the retention of these junior chemists, have already made a concession by suggesting that the annual subscription for this grade should be 40s. up to the age of 25, or for a period of three years from the date of election, whichever may be the longer. We presume that the whole subject will come up for settlement at the Annual Meeting at Newcastle, and while every member will regret the need for any addition to the heavy demands now made on all classes, we think they must agree that the need must be met, and that the Council's plan is the only business-like and direct method of meeting it.

The French Potash Industry

MONS. E. ROUDOLPHI, the general manager of the Alsace-Lorraine Trading & Development Co., put in a strong plea at a gathering in London last week for the development of trade between this country and France. Subject to the need, which must be taken account of in the future, for adequate protection against surprise, trade must eventually be determined by economic conditions. We shall inevitably go back, with a few reservations perhaps, to the practice of buying in the cheapest and selling in the dearest market. Germany, therefore, if she can produce more abund-

antly and more cheaply than other nations will, as the present prejudice weakens, recover at least a portion of her lost trade; indeed, from every point of view, a moderate recovery is preferable to an economic collapse. But where conditions are equal or anything like equal we cannot imagine British dealers preferring to trade with Germany rather than with Allies who were forced to combine with us at a vast cost of life and money to resist military aggression. And that is the ground which M. Roudolphi takes in claiming that Alsatian potash should have a fair chance in British and other markets.

It seems to us a reasonable case, and the growth of the Alsatian potash business in this country shows that he correctly interprets British trade sentiment. It is clear that Germany regards potash as one of her most powerful economic weapons, for it means food, and no one will fancy the prospect of a German monopoly of the world's potash supplies. If this is to be avoided, other sources of supply must be encouraged, and our French friends, who have suffered so grievously and have so many losses to make good, are certainly entitled to special consideration. If, in addition, they can supply needs we cannot meet ourselves on as good economic terms as Germany, their desire to develop trade with this country is one which British firms will naturally reciprocate.

A Ministry of Mines

SIR ROBERT HORNE, in the House of Commons on Monday presented a Bill to establish a Ministry of Mines and to regulate the coal industry. By this time we have had some experience of official regulation of national industries, and the prospect of the coal industry, which is the basis of our industrial life, being controlled by yet one more expensive ministry will bring but little comfort to either the industrial or the domestic user of coal. The new ministry will certainly mean extra expenditure at a time when retrenchment is urgently required; it will almost as certainly fail to increase output or to reduce the cost. What may confidently be expected of it is that it will require a large staff of costly officials who will probably know a good deal less about the coal industry than the people who have hitherto managed it. And it may necessitate, as Government control almost invariably does, additional efforts on the part of coalowners for the protection of their interests against capricious interference.

The Calendar

June 28	"Emploi des metaux ammoniums en Chimie Organique," by Professor P. Lebeau. 5 p.m.	King's College Strand, London.
29	London University: "Biochemistry of Sterols," by Mr. J. A. Gardner	Physical Laboratory, London University.
30	"L'Œuvre Scientifique d'Henri Moissan," by Professor P. Lebeau. 5 p.m.	King's College, Strand, London.
July 3-16	Annual Meeting of the Society of Chemical Industry	Armstrong College, Newcastle-on-Tyne.
13-24	Exhibition of Chemical Products.....	Armstrong College Buildings, Newcastle-on-Tyne.
13-14	Chemical Engineering Group, Fourth Conference: "Filtration."	Armstrong College, Newcastle-on-Tyne.

Refractory Materials for Chemical Purposes—I.

By A. B. Searle

The writer of the following article, which we propose to give in two parts, is well known as a consultant in connection with refractory materials. In the first instalment of his article he draws attention to those practical considerations which must be taken into account in the selection of refractories for use in connection with chemical and metallurgical processes.

For many years chemical engineers and others engaged in various branches of the chemical and allied industries very rightly devoted the greater part of their attention to the general nature of the reactions which occurred in the production of the materials with which they were concerned. This was essential in the early days of almost all branches of chemical industry, but at the present time it has become equally necessary to consider the nature of the vessels in which the reactions occur. At an early stage in the commercial manufacture of a material produced by chemical action there is usually less need for rigid economy in manufacture, but as the demand for the product increases and competition becomes keener it becomes more and more necessary to eliminate side reactions and other losses, some of which are due to the vessels or pipes with which the materials come in contact. For instance, the powerful catalytic effect of hot fire-clay bricks on coal gas and producer gas is seldom realised by the gas engineer, though it sometimes effects the decomposition of 20 per cent. of the active gas present. In the great metallurgical industries also, far too little attention has been paid to the "reaction vessels," i.e., to the bricks and blocks used in the construction of the hearths, boshes, and arches of the furnaces employed. Meticulous attention has been paid to an increase of a minute fraction of 1 per cent. in the sulphur or phosphorous-content of a steel, but few chemists engaged in steel works pay any attention to the much larger proportion of these elements in the materials used for the construction of furnaces.

The Choice of Materials

In the more distinctly "chemical" industries, the same indifference is usually shown and the author has, on several occasions, been astounded at the materials used for the manufacture of picric acid pots, of various concentrating vessels and other pieces of chemical stoneware.

The subject is altogether too large to be covered by an article, but the following suggestions will show the great advantages which result from a careful and skilful consideration of the refractory materials used in the construction of the plant.

In the construction of furnaces—whether for reducing ores so as to obtain the metal, or for calcining, roasting, or other analogous processes, or, in the case of metallurgical operations and glass manufacture, for melting materials either in crucibles or tanks or on hearths—the refractory materials employed are required to possess some or all of the following characteristics:—

1. Resistance to high temperature.
2. Resistance to pressure at high temperatures.
3. Non-absorptive power at any temperature.
4. Uniformity in size, shape and composition.
5. No expansion or contraction in use.
6. Resistance to abrasion by dust, flames, metal slag, and other materials.
7. Resistance to reduction or oxidation.
8. Resistance to wear and tear and accidental blows.
9. Resistance to sudden changes in temperature.
10. Thermal insulating power or conductivity, according as the heat is required to pass through the refractory material (as in crucibles and other vessels which are heated externally) or to be reflected from it as in reverberatory furnaces.

For so comprehensive a series of properties it is obvious that great care and skill are needed in the selection of

suitable materials combined with care in storing them, good making, and the skilful control of the furnace.

Many chemists have been seriously misled by the assumption of knowledge which they really do not possess, because the practical behaviour of a refractory material is often quite different from that of the material of which it is composed. For instance, the melting point of silica is about 1,470°C., but silica bricks (which are composed of a silicious rock slightly more fusible than pure silica) can be used for several months continuously in contact with metals and gases at a temperature of 1,700°C. To the man with only a text-book knowledge of the subject the continuous use of a substance in the solid state some 300°C. above its melting point is incomprehensible; but further investigation will show that the apparent impossibility is a fact, and that it is made possible by the remarkably low thermal conductivity of silica and fireclay bricks.

Chemical and Physical Properties

Even in a more directly "chemical" sense, a superficial consideration of the chemical and physical properties of a refractory material is often misleading, as good results are sometimes obtained from products whose chemical composition and physical properties appear to make them unsuitable; thus, silica bricks have been used for many years for lining kilns used for burning magnesite and in the roofs of tanks and pots for melting glass. These acid bricks are thus stable in contact with basic magnesia and when they are subjected to alkaline vapours from the glass batch.

For a similar reason the old precaution of separating the courses of "basic" (magnesia) and "acid" (silica or fireclay) bricks by a so-called "neutral course" of chromite or carbon bricks is rapidly falling into disuse, especially in the United States. Indeed, the emphatic distinction between "acid" and "basic" refractory materials—so dear to the works chemists in the past—is seldom used by those whose knowledge of these materials has shown how limited are the applications of such terms and how readily they may mislead those who do not understand them fully.

Taking in turn the various characteristics of refractory materials mentioned above, it should be noted that whilst resistance to heat is an intrinsic property of the materials of which a furnace or other heating vessel is constructed it is also largely dependent on the thermal conductivity of the material, i.e., on the time required to heat the mass. If only one face of a material of low thermal conductivity is heated, so long a time will be required before the interior of the mass is heated that for all practical purposes the material may be regarded as "infusible," and, as previously mentioned, the hot face, may, under some circumstances, be exposed to gases, slags or metals at a temperature above the melting point of the refractory material.

Resistance to pressure at high temperatures can only be obtained by the use of refractory materials consisting of a single and relatively simple compound. Mixtures of two or more oxides usually form eutectics or fusible products. For this reason, fireclays are less resistant to heat when under pressure than is either silica or alumina separately. The presence of even a small percentage of any impurity in a refractory material often results in a loss of heat-resistance apparently out of all proportion to the amount of impurity, simply because of the formation of such eutectics.

In this connection an investigation made about 40 years ago by Seger is important; he found that the softening point of mixtures of silica and alumina when plotted as shown in Fig. 1, fall on a clearly defined graph, the eutectic or most easily fused mixture corresponding to a compound with the formula $Al_2O_3 \cdot 13SiO_2$.

When refractory materials are heated under pressure their differences are still more marked; clays and mixtures of two or more oxides are gradually distorted as the temperature rises, whilst single oxides such as silica, zirconia, &c., usually remain rigid until a temperature is reached at which they collapse suddenly. Owing to the presence of impurities, the collapse is not as rapid as with pure materials, but it is very easily recognised and is an important characteristic. Magnesia, for some unexplained reason does not collapse suddenly, like most single oxides, but undergoes a gradual distortion like clays. For the construction of furnace arches the use of silica bricks is often preferable to fireclay bricks, as the latter soften and gradually collapse whilst the silica bricks remain rigid unless their critical temperature is exceeded, when they are more dangerous than fireclay bricks as they give way suddenly and without adequate warning.

The temperature at which bricks are distorted when heated under a pressure of 25 lb. per square inch is a good indication of their usefulness for arches and similar work, though due consideration must also be given to their other properties. The porosity, or conversely the impermeability, of a refractory material is often important with regard to its resistance to corrosion by slags and to the extent to which heat passes through the material. Thus, if the arch or crown and the side of a furnace are covered with kieselguhr the loss of heat by radiation may be very materially reduced.

The Spalling of Refractories

Closely connected with both the porosity and the permeability of refractory materials are the specific gravity of the latter and their tendency to "spall" or flake when heated. The apparent specific gravity is the relative weight of unit volume of the material as a whole, including any pores; it is chiefly an indication of the grading or sizing of the particles of material used and of the extent to which they have been heated. The true specific gravity, on the contrary, is that of the material itself and is usually determined after the material has been reduced to a fine powder. The true specific gravity is a valuable indication of molecular changes which have taken place in the material; thus quartz when heated intensely is first converted to tridymite and later to cristobalite, this last-named being the stable form of silica at high temperatures just as quartz is the stable form at low temperatures. This change in the molecular arrangement of the silica is accompanied by a change in the specific gravity of the material, and it is now recognised that properly burned silica bricks should not, after being ground to a fine powder, have a specific gravity higher than 2.39.

Exactitude in shape and size is especially necessary in the construction of arches or basins as, otherwise, the structure is liable to collapse. Such constancy of volume is best obtained (a) by the use of materials which naturally attain it under conditions of heating which are well within the compass of commercial treatment, and (b) by the mixing of materials which expand with those which contract, so as to produce a mixture which, as a whole, is constant in volume. There are obvious objections to the second method and the first should, therefore, be employed where conditions are liable to be severe. As most refractory materials do not readily attain constancy of volume, it is very important that they should be burned under such conditions as will ensure maximum constancy. Some forms of silica attain the required constancy much more rapidly than others,

some flints reaching almost constancy of volume after single calcination, whilst some sand grains and silica rocks may be heated to $1,400^\circ C$. a dozen times and yet their volume will change slightly on further heatings. With certain fireclays it is almost impossible to attain a complete constancy of volume on account of the succession of reactions which occur between the various constituents. Resistance to abrasion by dust or to corrosion by flames, metals, slags or other materials can never be completely secured. In an under-burned and porous refractory material such resistance is at a minimum, whilst it rises to a maximum in some materials which have been allowed to fuse and recrystallise in the process of manufacture. These materials are, however, very liable to spall, especially if the proportion of fused but non-crystalline matter is sufficiently large. Such spalling or flaking is, indeed, a characteristic of many refractory materials of a semi-glassy or sintered nature, though it may often be avoided by heating or cooling them sufficiently slowly through the critical range of temperature at which most of the expansion occurs—usually in the neighbourhood of $500^\circ C$.

Abrasion and Corrosion

For most purposes, high resistance to abrasion and corrosion is obtained by the use of partially fused or sintered material with a minimum porosity. For such material to be also insensitive to sudden changes in temperature it should consist essentially of a porous "skeleton" or sponge, the interstices of which are filled with fused material which, being much harder than the sponge or skeleton, is better able to resist either abrasion or corrosion. On the other hand, the shape of the goods is retained by the skeleton or sponge in a manner which would be quite impossible if the whole material were to be fused to the same extent. The nature of these skeletons and sintered materials, has, as yet, only been studied imperfectly, and there is ample scope for investigating still further their formation and their properties.

In considering which refractory material is most likely to prove resistant to corrosion under any given conditions, it is essential to bear in mind the nature of the corroding materials as well as the conditions under which the corrosion occurs, and it is also necessary to avoid drawing false conclusions from the assumed incompatibility of acids and alkalis or bases. The behaviour of corrosion-resisting refractories does not depend wholly on that of the corroding materials; the nature of the surface, the texture and other physical properties which are often overlooked are sometimes of prime importance. Moreover, some substances, commonly regarded as neutral, are decomposed under the conditions in which they come in contact with a refractory material and then act quite differently from what might be anticipated. Common salt, for example, at a temperature of $1,100^\circ C$. forms a glassy coating on fireclay bricks and on some silica bricks owing to the formation of a fusible sodium-silica compound. Even when the temperature is too low for actual fusion to occur ($950^\circ C$.) similar compounds are produced, and if the refractory material is of a porous nature it may rapidly be destroyed if the temperature accidentally rises above $200^\circ C$. The seriously corrosive effect of salt on refractory materials at temperatures in the region of $1,000^\circ C$. is well known in several branches of chemical industry. It is much less serious with highly aluminous clays than with the more siliceous ones so that the former should be given preference when corrosion by salt is feared. Unfortunately, the aluminous clays do not transmit heat so readily as more siliceous materials, so that they are not as satisfactory for the construction of coke ovens, retorts, &c. Attempts to protect such appliances by a wash of glaze are based on a misunderstanding, and in ignorance of the fact that such can increase the fusibility and, therefore, the corroding power of most glazes.

Reviews

EVERYDAY CHEMISTRY. By W. Robinson, B.Sc. London: Methuen & Co., Ltd., 1920. Pp. 131. Price 3s. 6d.

This interesting little book is essentially a guide for teachers, and consists largely of notes relating to experiments which are suitable for demonstration to a class of adult students of the continuation school type. It is not a book for the student who wishes to study chemistry with a view to becoming an analytical, industrial, or professorial chemist. The author claims that the book may serve to teach chemistry without the use of a single formula. We agree with the author when he says that adult education is a growing problem, and we think his book is admirably suited for the use of teachers who have to give a course of lectures to adult students of good general education who are handicapped by a deplorable ignorance of the laws of nature and of the constitution of matter. Our classical schools supply the business world with many men thus handicapped. The author's selection of subjects for discussion and experiments for demonstration is excellent and cannot fail to interest any student of intelligence, but if used by the students themselves the book should be used only under the guidance of a competent teacher.

Regarded as a work on chemistry the book is necessarily of a very sketchy character, and we question the wisdom of recommending the use of a soda-water bottle for exploding a mixture of acetylene and pure oxygen in the proportion of 1 to 2½ (page 105). On page 31 the author says that limestone cannot be heated strongly enough in a crucible to cause decomposition, and then proceeds to instruct the teacher to heat some limestone in a crucible to produce lime. Evidently, a few revisions are desirable.

H. F. H.

FOOD INSPECTION AND ANALYSIS. By Albert E. Leach. Revised and enlarged by Andrew L. Winton, Ph.D. 4th Edition. John Wiley & Sons, New York, 1920; and Chapman & Hall, London. 45s.

Since 1904 when the first edition was published, the problems involved in food analysis and its control have, step by step, become more complicated, and have brought in existence a considerable literature which required incorporation in any standard book of reference dealing with the subject. Dr. Winton has done his revision with care, and has thus brought the book up to date, so that the present edition cannot fail to be of value to public analysts, health officers, sanitary chemists and food economists whose duties have increased owing to the war, and who now are faced with the many novel conditions to which the war has given rise.

All readers of the earlier editions will appreciate the attempt which has been made to bring the volume in line with modern conditions of food production, and although very little reference is made to British regulations and the legislation of this country, workers here will find that the American practice does not differ sensibly from that to which we are accustomed. There are some 90 pages of additional matter introduced into the present edition, including a final chapter by Professor Wendt on the determination of acidity by the hydrogen electrode, which, the author suggests, will play an important part in the routine work of food analysis when natural colouring matters obscure or interfere with the usual indicators.

S. R.

The Du Pont-Levinstein Contract

SENATOR WOLCOTT, in his defence in the United States Senate of the recent agreement between E. I. Du Pont De Nemours & Co., and Levinsteins, of Manchester, for the interchange of trade secrets, said the arrangement had been entered into by the Du Pont Co. to give to the American consumer all the advantages secured to the British consumer through the seizure of the German plants. "The immediate effect of these negotiations," he stated, "was to secure for America the 'know-how' so urgently needed in this country and which enabled the Du Pont Co. in a comparatively short time to reproduce and make available to American consumers substantial quantities of dyes equal in quality to any manufactured by the Germans. It cannot be fairly said that any monopolistic or otherwise improper motive underlies either negotiations or execution."

Potash Mines of Alsace

Trading Relations Between England and France

At a luncheon given to members of the chemical and fertilising industries on Friday, June 18, at the Cafe Royal, London, to meet Monsieur F. A. Helmer, Senateur de France and one of the principals of the potash mines of Alsace, Mr. E. Roudolphi managing director of the Alsace-Lorraine Development and Trading Co., Ltd., said that he was very glad to have around him so many English business friends with whom he had had very cordial relations ever since he came to this country. The object of these relations was to bind them together in order to keep off the enemy, who, in peace and in war, had used every subterfuge to gain his own ends. As they were aware, Germany only allowed them to have those raw materials it could really spare, keeping back those which helped it to build up its industries in order that it could sell other countries the finished products. His idea had always been to exchange the produce and manufactures of both countries in the best possible way, and he was very glad to have the hearty support of the leading business men of this country.

It was recognised to-day more than ever that combination was one of the most powerful supports of modern trade. If each trade combined in a fair and loyal spirit, suppliers, merchants, and consumers would benefit and such combination would also develop the spirit of comradeship. Business men must be comrades, and as such they would see that one protected the other. Protection, not in Chamberlain's meaning of the word, was especially needed against unfair competition, which in the end was bound to damage all parties. He felt that he could rely on the goodwill of those present in thus co-operating for the common good of the Allies. France had suffered enormous losses between 1914 and 1918, and if France had not borne the brunt and resisted without flinching they would not be there to-day to enjoy what their common sacrifices had brought them. It was to the interest of England and France that they should work together to keep Germany out—particularly out of the potash business of this country. In their particular line France could supply all that was required at a price as cheap as or even cheaper than Germany. Sooner or later their opponents would try to occupy their former privileged position as monopolists, but France hoped and expected that England would do all in her power to favour France, other things being equal, and if they went hand in hand they would conquer as they did in 1918. The spirit of friendship existing between them would help them to overcome many difficulties, but in the end they would triumph and keep for their two peoples the markets they could supply.

Monsieur P. A. Helmer, speaking in French, thanked those present for their good wishes and support, and reiterated the Chairman's statement that France was only too willing and ready to supply potash salts for the development of agriculture in this country.

Monsieur Bonson, French Consul General, proposed the health of Mr. Roudolphi. This was seconded by Mr. Snipson (Messrs. E. Packard & Sons, Ltd., of Ipswich), who assured Mr. Roudolphi of the support of the chemical and fertilising trades in this country.

Patents in Cyprus

THE Government of Cyprus have passed a law entitled the Patents Law, 1920 (No. IV. of 1920), which provides that letters patent for any invention may be granted in Cyprus to any person holding in England a valid patent for such invention, or to any person to whom all interest in such patent in respect of Cyprus has been assigned. Applications for patents must be addressed to the Registrar, and must be accompanied by two certified copies of the letters patent granted in England, and two certified copies of the complete specification and drawing (if any) relating to the patent. An affidavit must also be furnished that the applicant holds a valid patent in England for which protection is asked, or that he is the person to whom all interest in such patent in respect of Cyprus has been assigned. The High Commissioner in Council is empowered to make rules for the carrying into effect of the provisions of the law, and prescribing fees. A copy of the law may be inspected in the Public Library of the Patent Office, 25, Southampton Buildings, London, W.C.2.

The Vegetable-Oil Industry of Hull

FOR a number of years Hull has been known as one of the largest vegetable-oil centres in Europe. Prior to the war Hamburg ranked first and Hull second; but during the war Hull so increased its plants and equipment that it is now, without doubt, the largest centre in Europe, and it is thought will easily retain the trade and position already established.

The industry was completely under Government control until the end of March, 1919. This control was worked with the minimum of inconvenience, and there were few complaints. The basis of priority allocations upon which the supplies of oil and cake products were distributed was:

1. The manufacture of edible oils, such as margarine and cooking fats.
2. Soap and candles.
3. Industrial uses, including the manufacture of paint, varnish, oilcloth and linoleum.

The greater part of the oil was used for culinary purposes. Linseed oil could be used for industrial consumption only on condition that it be "split," and the glycerine thus obtained delivered to the Government.

The war greatly augmented the importance of the vegetable-oil industry owing to the increased demand for glycerine (for explosives), lubricating oil (castor oil for airplane motors), oil cake for cattle food, and oil for the manufacture of margarine. On account of the shortage of butter in the United Kingdom enormous quantities of margarine have been manufactured. Hull plants now turn out an average of 10 tons per week, which is retailed at 26c. a lb., against 98c. a lb. that is obtained for butter.

Imports and Exports

Prior to the war oil nuts from British West Africa were sent mainly to Holland and Germany for crushing. During the war the Government requisitioned the entire output of British West Africa and Egypt; but, notwithstanding, the supply of raw material available did not equal the demand.

In tons the weight of the oilseeds imported in 1919 is 1,148,810, against 722,914 tons in 1918 and 1,229,472 tons in 1913, the increase over 1918 being largely due to heavy receipts of linseed, and the falling off as compared with 1913 being due to the smaller quantity of cotton seed received. Approximately three-fifths of the linseed came from the British East Indies in 1919, and practically all of the rest came from Argentina; 247,342 tons of cotton seed came from Egypt, as against 333,435 tons in 1918, and 170,601 tons from India against nil in 1918. Rapeseed and castor beans were practically all from India.

As already stated, oilseeds were controlled by the Government until the end of March, 1919. While under control all material was sold at fixed prices, which were changed at intervals by the Government, due notice being given. With de-control in view, the Ministry of Food during March made arrangements with the crushers throughout the United Kingdom to take over at fixed prices all stocks and commitments of seed lying in warehouses in different parts of the country. For a short period business was retarded, though such trade as was effected was done at maximum prices. From this time on prices were very flexible.

In addition to the large quantities of raw materials imported from other countries, the United Kingdom makes large purchases of foreign and unrefined vegetable oils, the imports for the past three years aggregating \$33,619,642 for 1917, \$56,410,494 for 1918 and \$104,720,321 for 1919.

The oils and oilseeds imported into the United Kingdom are not all retained in the country for consumption or for manufacturing into commercial products. A certain proportion is re-shipped in the form in which received, though such shipments are of minor importance when contrasted with the total imports. These re-exports in 1917-1919 amounted to \$14,507,663 for 1917, \$980,959 for 1918 and \$15,141,466 for 1919.

	1917		1918		1919	
	Tons	Value	Tons	Value	Tons	Value
Oilseed Cake	131,898	\$10,184,616	2,719	\$222,024	198,926	\$19,527,303
Cotton seed	76,800	7,221,073	8,109	800,106	71,252	7,977,386
Linseed	616	44,850	—	—	190	19,469
Rapeseed	3,518	254,489	—	—	7,906	806,457
Unenumerated	—	—	—	—	—	—
Total	212,892	\$17,705,028	10,828	\$1,022,130	278,274	\$28,330,612

With de-control came a quick revival of the export trade in British-made vegetable oils, shipments in 1919 being nearly seven times those of 1918. The outstanding feature of the year was the phenomenal gain made by pure linseed oil—\$31,818,821.

Trade in Oilseed Cake

The imports of oilseed cake (unsweetened) into the United Kingdom for 1919, as compared with 1918 and 1917, are shown in the preceding table.

In 1918, for nearly the whole year, the importation of oilseed cake into the United Kingdom was prohibited in the interest of economy of shipping.

The exports of British-made oilseed cake in 1919 amounted to 5,099 tons, valued at \$448,857. The exports in 1918 were only 70 tons, value \$7,397; and in 1917 85 tons, value \$7,499. There were no re-exports of foreign or colonial cake.

Labour Conditions: Outlook for 1920

During 1919 labour conditions were anything but good. Although there were no strikes in any of the vegetable-oil mills, there was a general dissatisfaction on the part of the workers. Numerous strikes of dockers, and a general strike of the railway employees lasting ten days, caused great congestion upon the docks, and the crushers were a number of times practically without seed. Furthermore, they had enormous quantities of oilseed cake in their warehouses which buyers were unable to secure because of a shortage of barges and freight cars. Conditions are now practically normal.

During the first quarter of 1919, while the industry was under Government control, the profit to the mills averaged 10 per cent. After control was removed there was considerable speculation, and, as before stated, prices soared. During this period and for the last half of the year profits averaged 25 per cent.

The outlook of the British vegetable-oil industry for 1920 is very promising. A new plant of enormous size, consisting of an extraction mill, chemical laboratory, deodorising plant, refinery, and margarine, lard and soap factories is erected by a local company. During January and February 596,939 gallons of linseed oil, valued at \$999,770, was invoiced through the Hull consulate for shipment to the United States. Shipments promise to exceed this amount later in the year.—*Chemical and Metallurgical Engineering.*

The Chemists' Lot

To the Editor of THE CHEMICAL AGE.

SIR,—I recently received from a well-known chemist a heart-rending epistle complaining of hard times. I have ventured to put his thoughts into the burette of my mind and to pour them out in quantities of 10 drops, or shall I say tears, each. The following is the result.—Yours, &c.,

AGRICOLA.

Sad is that chemist's lot who, year by year,
Sees, pound by pound, his riches disappear;
His Company, sole source of all his wealth,
Pays E.P.D. for Pensions, War and Health,
And ministries planned on a grandiose scale,
And Coal Controllers selling lumps of shale,
And Food Controllers, God confound their eyes!
Who make the quatern loaf and bank rate rise.
So much is taken that they cannot send
To each sad shareholder a dividend.
But though his income, in these times of stress,
Small by degrees and beautifully less,
Barely suffices for his household needs,
New tax to new tax rapidly succeeds
His butter and his bacon cost him more,
And creditors remittances implore.
Helpless, unfriended, melancholy, slow,
To his bank manager he now must go,
Seeking with eloquence and wily craft,
Some loan or necessary overdraft.
But here, too, disappointment dooms the man,
And borrowing restrictions foil his plan.
Raising the wind by every known device,
He sells his shares at ever-falling price;
He'd sell his houses, but the law prevents
And forces him to keep his meagre rents.
At last the cost of living rises so,
The force of nature can no further go;
A fresh demand for income tax appears,
He dies, o'erwhelmed by worry, debts and fears.

Cotton Industry Research

Plans and Progress of the New Association

THE British Cotton Industry Research Association, which was incorporated on June 7, 1919, has issued a report of its first few months' work. After referring to the appointment of Dr. A. W. Crossley, who resigned the Daniell Chair of Chemistry in the University of London, King's College, to take up the position of Director to the Association, the report states that the Association's researches into the fundamental problems concerning the growth and uses of cotton will achieve success in proportion to the extent to which they are organised on a co-operative basis, the workers in several sciences directing their efforts towards the solution of a common problem. To secure this end it is considered essential that the various departments should all be working at one centre.

Through Mr. W. Greenwood, the Association has, as we have already stated, acquired, for £8,000, the property known as "The Towers," in East Didsbury. The building, which stands in about 13½ acres of ground, can readily be adapted to serve as the central or administrative block, with accommodation for offices, library, council room and storage rooms, and some of the rooms can be adapted at once to serve as temporary laboratories until portions of the permanent buildings have been constructed. An appeal for a special building fund of £250,000 is about to be issued.

Appointment of Departmental Chiefs

The next step anticipated by the Council is the appointment of heads of departments in the subjects of chemistry, physics, colloids, botany, and technology. These heads will be in a position to consult with and advise the Director regarding the building and equipment of their special laboratories, acquisition of the necessary books and journals for the library, and the engagement of competent assistants. Dr. A. F. Oxley, of Cambridge and Sheffield Universities, who was engaged on experimental work during the war and is the author of various papers in the *Philosophical Transactions* of the Royal Society, has been appointed head of the Physics Department, and Dr. J. C. Withers, of the Chemical Department, St. Thomas's Hospital, London, has been appointed to direct the abstracting and indexing of scientific and technical information in connection with the Records Bureau. This information is scattered in numerous journals and other works, and it will be some time before these records can be thoroughly searched by Dr. Withers and his assistants in order to give a comprehensive idea of the work accomplished in the past.

A large number of University teachers are now members of a scheme whereby a superannuation provision may be made continuously during the service of the member, whether that service is rendered to one or more institutions. The Council has, therefore, thought it wise to apply for admission as one of the institutions included in the scheme, and has recently received notification that the application has been granted. This will make it possible for members of University staffs to move freely on to the staff of the Association without the interruption of their superannuation provision.

Publication of Abstracts

In response to a proposal from the Textile Institute that the various textile industries should join in financing the publication of abstracts of English and foreign papers dealing with matters relevant to the textile industries, the Council has decided that though such abstracting would be costly, the expense would be justifiable, and that if the necessary support were forthcoming from other quarters, the Cotton Research Association should interest itself in the scheme. The Council, therefore, has made a grant to the Textile Institute of £300 for one year. It is hoped it may be possible to arrange for workers in the Research Institute to use the Manchester libraries, but it will none the less be necessary to acquire a very large number of standard scientific works of reference and journals for the library of the Institute. The thanks of the Association are due to Dr. Crossley for the loan of his own chemical library, which forms a valuable beginning to the Association's collection. The Council would welcome gifts of books, more particularly back numbers of scientific and technical journals, for the library.

Scheme of Research

It is at present too early to give details as to the actual work which will be started, but the chief aim will be to solve funda-

mental problems, and thus to arrive at the principles or theory underlying the practice of the industry, leaving the application of the theory to those actively engaged in the industry. But while this will be the chief aim of the Association it is recognised that applied research cannot be entirely omitted, especially in the investigation of such matters as may be considered beyond the resources of individual firms. The Research Committee which has been elected by the Council will, in consultation with the permanent officials, formulate a scheme of research dealing with clearly defined, fundamental problems, such as:—

1. Nature of the cotton cuticle and the influence on its physical properties of different reagents such as are used in technical operations of mercerising, bleaching, &c.
2. Effect of reagents, particularly those used in technical operations, on the strength and elasticity of fibre, yarn and fabric.
3. Nature of the change produced by mercerisation, whether chemical, physical or colloidal.
4. Nature of tendering, including a comparison between different types of fibre.
5. Variation of the physical properties of sized yarn, with change in colloid properties of the sizing material.
6. Chemical constitution of cellulose.
7. Nature of the dyeing process.
Collection of the established facts, with critical regard to—
(a) Established purity of experimental materials.
(b) Nature of the dye solution.
(c) Chemical change in the dye solution during the dyeing process.
8. The devising of methods for obtaining precise information as to length of staple, behaviour of fibres under stress and strain, degree of variation in the counts and diameter of yarn, relative twist, degree of resistance of yarn to weaving friction and similar methods of measurement.

Scholarship Schemes

A scheme has been undertaken by five Oldham mills to provide scholarships for the training in some branch of science of Oldham students who are desirous of eventually becoming members of the staff of the Research Association. Under this scheme six university scholarships of the value of £100 per annum may be awarded, and the courses of training will be subject to the approval of the Director of the Research Association. Somewhat similar schemes are being arranged in Radcliffe, Stalybridge, Stockport and Houghton.

British Empire Steel Corporation

At the adjourned annual meeting of the Dominion Steel Corporation in Montreal on Saturday, June 19, a discussion took place regarding the inclusion of the Company in the British Empire Steel Consolidation. Several directors who objected to the recent negotiations had sought to restrain the Dominion Corporation from joining by applying to the Courts for a writ of injunction on legal grounds, which, however, Chief Justice Archibold refused, with costs against the plaintiffs. Senator Frederic Nicholls, President Wolvin, Colonel Grant Morden, M.P., and others spoke briefly in refutation of the statements of the four opponents, Messrs. J. H. Plummer, E. R. Wood, Dan Durand and W. McMaster, who alleged that full information regarding the terms upon which a number of the minor companies were included in the Consolidation had been withheld, and urged the shareholders to refuse [to approve of the action of the rest of the board until such particulars were forthcoming. Colonel Morden and President Wolvin pointed out that all the facts were not available at present, as the negotiations were still in progress, but promised full information as to the terms when the shareholders of the constituent enterprises met formally to pass judgment upon the proposals. It was also pointed out that the four speakers against the Dominion Steel's participation in the Consolidation represented only some 800 shares of stock out of 500,000, while the new interests and their associates had the voting power of over half the outstanding capital stock of the Corporation. He assured the shareholders no cash payments would be made to the minor companies likely to be included in the merger, and the negotiations now in progress were likely to result in substantial concessions to the new consolidation.

The British Cyanides Co., Ltd.

Review by the Managing Director

THE annual meeting of the British Cyanides Co., Ltd., was held in London on Wednesday, Mr. C. F. Rowsell (chairman) presiding.

The Chairman, in moving the adoption of the report and accounts, said the gross profit for the year on trading amounted to £69,919 4s. 1d., as against £62,720 8s. 6d. last year, while our manufacturing and general expenses amounted to £42,265 7s. 5d., as against £40,992 2s. 2d. last year. The result was that we were able to carry forward to the balance-sheet a balance of profit for the year, subject to excess profits duty (if any), of £25,042 5s. 9d., as against £20,572 6s. 9d. last year. Referring to investments in allied companies, he said the Oldbury Syndicate stood last year at £26,470 15s. 5d., but this year it stands at £34,758 16s. 5d., the loan to that company having been increased by a little over £8,000 during the year; this represents the costs of the experiments which have been carried out during the year on the barium process. They were in the middle of important negotiations with the British Potash Co., and during the year they had liquidated, with a fair profit, the business of Fred Danks. The total issued capital had been increased during the year by the issue of 117,505 ordinary shares, so that the total amount of issued capital is now 48,328 preference shares and 325,615 ordinary shares. Sundry creditors this year stand at £52,617 9s. 1d., as against £51,628 3s. 9d. last year. The reserve account last year amounted to £22,781 1s. 9d., while this year it stands at £23,000. There was a total profit this year of £29,894 6s. 9d. available for distribution. Out of this £12,577 5s. 8d. had been paid in interim dividends, &c., leaving £17,317 1s. 1d. to be disposed of. They proposed to deal with this by paying a dividend on the preference shares of £1,205 9s. 6d., paying a dividend on the ordinary shares for the last half-year of 10 per cent. per annum, free of income tax, amounting to £11,320 6s. 1d., in payment of directors' percentage thereon (£808 11s. 10d.), leaving a balance to be carried forward, subject to excess profits duty, if any, of £3,982 13s. 8d.

Progress of the Chemical Side

The Managing Director (Mr. Kenneth M. Chance) afterwards addressed the meeting, and in the course of his remarks, said that on the chemical side of the business the progress made since the beginning of this year (1920) has been greater already than in any previous complete year in the history of the company. We have already, in the face of all sorts of difficulties, materially decreased our costs of manufacture, and our research department has worked out new methods, the adoption of which will undoubtedly result in further great economies being effected. You will understand that during these three years of somewhat feverish activity our methods of manufacturing have necessarily been largely opportunist, because during the 18 months prior to the Armistice we were continually endeavouring to force our output up to meet the ever-increasing demands of various Government Departments, and the 18 months which followed the Armistice have been spent in finding out how much of our plant that was installed for war purposes would be suitable for the production of chemicals for which there would be a permanent demand in peace time—a problem that has proved both difficult and costly; in determining the extent of that demand for products that we had never manufactured prior to the war, and in making provision in the form of additional buildings and plant to meet that demand. There have also been somewhat exceptional difficulties during the past 12 months, caused by the transfer of some of our processes from one factory to another, and by the consequent manufacture of many of our products in plant that had to be temporarily adapted to the purpose. All these difficulties have now been overcome, and during the year that lie before us the manufacturing side of the business will have the opportunity of taking advantage of the new buildings and plant which have now been put at its disposal by the engineering department, and of the improved methods of manufacture that have been opened up by the research department.

I gather that there are some who, not unnaturally, doubt the ability of this company to meet German competition. Although I cannot yet tell what our costs of manufacture are

going to be when we have settled down under the new conditions, I feel pretty confident that we shall be capable of meeting any competition that comes along, whether from Germany or elsewhere, so long as our efforts are not frustrated either by unfair taxation or by impossible restrictions on trade imposed by the Government, on both of which points I shall have a few words to say later on.

Barium Process: Developments at Billingham

With regard to the Barium process, we have during the past 12 months carried out a lot of large scale work, gained a great deal of valuable information, and from that information arrived at a new starting point for further large scale work; but we have been terribly held up for materials, with the result that by the time we start work again, some six or eight months will have been spent in obtaining what in pre-war days we could have certainly got in a few weeks.

The new company that is being formed to develop the production of synthetic ammonia at Billingham may, perhaps, have alarmed shareholders, who know that we are also experimenting on the fixation of atmospheric nitrogen. I was a member of the Nitrogen Products Committee, and was a strong advocate of the erection of plant for the fixation of atmospheric nitrogen by modifications of the Haber process. I believe that ultimately the process on which we are working will prove to be better suited for the economical production of synthetic ammonia in this country than any other; but it must inevitably be many years before we can reach that point, and, in the meantime, directly we succeed with this process, we shall have reached our first objective—namely, a cheap and unlimited source of supply of cyanogen, and we shall have quite enough to do in the development of that side of the invention for some time to come. You need not, therefore, have the least alarm as to the effect of the developments at Billingham upon this company, and, indeed, if I may say so, I hope that those great firms which have shown so much enterprise in taking up this project will be rewarded with complete success, and will succeed in producing adequate supplies of ammonia and of nitric acid manufactured therefrom in this country to meet all possible home demands. The export market is so vast that there will be plenty of room for us later on.

The Potash Industry

With regard to potash, we have made a great deal of progress, and not only has the output of the potash factory increased materially during the past year, but the methods of manufacture have been greatly improved, together with the quality of the finished product. Unfortunately, the Government have taken rather too fatherly an interest in the potash industry, and its latest display of affection has taken the form of prohibiting the export of potash except under licence, while, since the Sankey decision in the Brown and Forth case, imports are absolutely unrestricted. The manufacture of potash in this country, therefore, finds itself open to attack from the natural sources of supply of Germany and France, who are free to send over here as much as they like, while we, on the other hand, cannot retaliate by taking advantage of the high prices ruling in other countries because exports are prohibited.

It is a curious way of helping a new industry, is it not? And yet, apparently, some of the crystal glass manufacturers in this country are not satisfied even with that form of protection, and are raising trouble with the Board of Trade, in the House of Commons and in the Press because some special arrangement has not been made with Germany whereby they can obtain pure carbonate of potash at prices far below those at which the Germans can manufacture it.

Great encouragement has been given to us by chemical manufacturers in this country. Our difficulties have been such that at times one has been tempted to despair of success, but when things looked at their very worst a letter would come along from one or other of the chemical or allied firms or groups interested in potash, either congratulating us on what we had already done or containing friendly criticism of the most helpful and instructive nature.

The motion was unanimously adopted; and resolutions were afterwards passed confirming the payment of the half-yearly dividends on the preference and ordinary shares, declaring the final dividends as recommended, re-electing Mr. Rowsell as a director and re-appointing the auditors.

Railway Rates Inquiry

Position of the Widnes and St. Helens Chemical Manufacturers

THE interests of the chemical, glass and copper trades at St. Helens and Widnes were detailed at length by Mr. Rowland Whitehead, K.C., at the resumed inquiry of the Railway Rates Advisory Committee at Lincoln's Inn, London, last week. In connection with the chemical trade, Mr. Whitehead pointed out that it included the United Alkali Co., one of the largest manufacturers in the kingdom, and also the production of sulphuric acid. All the trades in the district—glass, copper, and chemicals—were apprehensive, he said, that in the endeavour to secure something like uniformity of system in the railway charges, the special statutory rights and privileges for which their predecessors bargained some 60 years ago might be swept aside or modified to their detriment. The flat rate and percentage additions had hit them very hard. He submitted that in substance a bargain in 1864 had been made and confirmed, slightly extended, and re-enacted in 1902.

The Chairman (Mr. F. Gore Browne, K.C.) asked if the companies were paying double or treble dividends now.

Mr. Whitehead: All traders are living in abnormal conditions.

The Chairman: If people are paying double and treble dividends they could, perhaps, pay a little more for transport.

Mr. Whitehead replied that he was thinking of the future, and any permanent fixing of increased rates. His clients were in direct competition with foreign manufacturers and that competition had not applied during recent years. It was, however, beginning to be felt again, and chemicals were being offered in Liverpool lower than they could offer them.

Sir John Simon, replying, said that what his friend was asking amounted to an admission that if the distinction were to be preserved, some one else would have to make up the difference. He could not agree that the bargain had been broken. "And after all," he concluded, "we are all bound to submit to the fate that overtakes us."

Terms of the Old Agreement

Commenting on the proceedings *The Times* says that the circumstances in this case are quite exceptional, and the problem raised is admittedly a difficult one. Early in the 19th century the local manufacturers, desirous of obtaining cheap communication with the ports on the Mersey, and cheap imports of raw materials being vital to the prosperity of the chemical industries, obtained powers to construct a local railway and to construct docks at Widnes and Garston. They gained in this way the advantage of low rates, and when in the year 1864 the London & North-Western Railway desired to absorb the railway and dock undertaking the traders secured as part of the consideration special tolls and rates for the commodities in which the locality was interested. It is not disputed that it was a good bargain for the railway company, who thereby secured not merely unity of control of traffic, but a new railway port at Garston, which they have since developed to a remarkable extent. A point is made by the traders interested of the fact that the Act conferring these concessions has been amended from time to time, the last occasion on which the old Act was reviewed being the year 1902. It is not, therefore, it is argued, a question of obsolete rates, but of live rates on which the industry has been built up, and it is contended it would not be just that the bargain should be set aside in the permanent revision of railway rates.

The Present Position

The position to-day is that under the powers conferred on the Ministry of Transport and the Defence of the Realm Act, these rates have been increased, an example quoted being that of an inter-siding rate which has been advanced by 226 per cent. In another instance a rate of 1s. 2d. has become 2s. 2d. The St. Helens and Widnes traders ask that the rates authorised in the year 1864 shall be restored. Competition is, it is stated, becoming keen in the heavy chemical branch, which, as the foundation of other trades, is one of more than local importance. A point was made by Mr. Gore Browne of the fact that additional charges for transport are not a very high percentage of the increased costs of production, and as Mr. Acworth insisted, if the old rates are restored the traffic would be carried at a loss which would have to be made up on other

commodities. There is also the consideration that while the bargain was made with a particular railway company in the year 1864, the revision of rates is now being dealt with from the broader aspect of fixing them in the general public interest, and of getting rid of State-aided railway competition with other forms of transport. It should also be borne in mind that if the old St. Helens Railway were in private ownership to-day it would be impossible, if the company were to remain solvent, for the old scale of rates to be maintained. The point raised will, however, receive careful consideration, but it is more probable that it may be determined rather by the special requirements of the industries affected to-day than in the light of the old agreement.

Statement by the United Alkali Co.

With reference to the statement regarding increased dividends, the United Alkali Co. point out that the suggestion is certainly not applicable to their company. In 1913 the ordinary capital of their company was reduced to one-fifth of its then paid-up figure, and the dividend paid of 15 per cent. is upon this severely reduced capital figure of one-fifth. The result to the shareholders is that, although getting 15 per cent. nominal upon their reduced capital held, it only amounts to 3 per cent. upon the amounts paid up upon their shares. The company also deny Sir John Simon's statement that the traders were trying to place a portion of the costs of carrying their goods on other people, and give the facts of the old agreement, stating, in addition, that after the sale of the railway to the London & North Western Railway Co. the railway undoubtedly became of considerably increased value. Would the traders have been heard, they ask, if they had raised the point that in consequence of this increased value they were entitled to a further payment from the buyers? So far from asking other people to bear part of the burden of carrying their goods the traders have already overpaid this carriage with the capital advantages the North Western Co. have received.

Increased Range of British Dyes

COMMENTING on the increased output of new dyes, *The Times* states that British Dyestuffs Corporation is now able to manufacture alizarine cyanine green in fair quantities, and the rate at which they are increasing both range and quantity of all classes of dyes is very encouraging. Brotherton & Co., Ltd., have also had a notable success in placing metachrome black on the market. These metachrome colours have assumed great importance in wool dyeing, as they give fast shades in a single bath, thus saving labour and steam. There has been a demand for a fast black dyed in a single operation, and Brotherton's metachrome black solves a difficult problem. There is a chrome colour known as diamond black which has excellence in fastness to potting, a process which gives a certain desirable finish. To some extent potting is not as important as formerly, as the finish can be obtained by another process, but it would be looked upon as a triumph if British makers could put diamond black on the market. The advent of a really satisfactory metachrome black, together with the long range of vat dyes now turned out by several British makers, is a proof that no difficulty is insurmountable to our colour chemists. The artificial indigo turned out at Ellesmere Port in two brands, for wool and cotton respectively, is acknowledged to be of excellent quality, and it is now manufactured in bulk. British Dyestuffs Corporation are also able to deliver the most important of the intermediates used by dyers, paranitraniline and beta naphthol, for instance, of which there was lately a shortage.

Nitrate Arrivals

NITRATE arrivals in the last fortnight have been about 55,000 tons, and about 20,000 tons are due during the next fortnight. A steadier tone is reported in the market with a fair demand from consumers for near delivery, and considerably more inquiries for cargoes for next season's arrival, the value of which has appreciated to 24s. 6d. to 25s. per cwt. c.i.f. Interest is now centred on the Nitrate Producers' Association's announcement that they were open, after 9th inst., to sell up to 1,100,000 tons (at 15s. 6d. to 17s. per quintal, according to position), of which 200,000 tons has now been disposed of. Freights have continued to rule dull.

Cold Vulcanisation of Rubber

Economic Value of the New Process

MUCH interest has been shown regarding Mr. S. J. Peachey's new process for the vulcanisation of rubber, a short account of which was given in our last issue. Not a little scepticism has been shown by certain branches of the manufacturing side of the rubber industry, but this, Mr. Peachey states, is a quite natural attitude for rubber manufacturers to take who have not seen the process or who are not chemists themselves, as it certainly appears an incredible thing for vulcanisation to take place in the cold.

Mr. Peachey claims that the new process is applicable not only to rubber in its ordinary forms as an elastic or plastic solid but also to dissolved rubber, and that, being under complete control, it renders possible the production of a theoretically perfectly vulcanised rubber containing no free sulphur, and therefore not liable to undergo after-vulcanisation or aging. In addition to securing greater durability, it is possible to introduce numerous delicate shades of colour which cannot be obtained under the old conditions. Leather waste, wood meal, and starch cellulose can, by means of the new process, be mixed with rubber so as to yield cheap, fully vulcanised products with new properties and exceptional durability. In this way a new class of material to replace linoleum and other floor coverings can be obtained, largely from waste substances. The time required for the complete series of operations is about an hour whereas the time taken up by the existing method of manufacturing machine-made floor-cloths is more than a month. Apart, therefore, from the difference in the price of raw materials, the saving in time represents an enormous reduction in the cost of manufacture. Seventy per cent. of leather waste (buffings and shavings) mixed with 30 per cent. of rubber is converted by the Peachey process into a substance possessing all the valuable properties of the original leather, together with the advantage of being waterproof. The process lends itself to the manufacture of hard-wearing leathers suitable for boot and shoe manufacture, as well as to the manufacture of delicately coloured and grained leathers for upholstery and fancy work. The reformed leather may be built into any desired article, and seams may be joined and soles and heels attached by vulcanisation. Stitching and rivetting would thus be dispensed with.

Besides being a cold process, with the consequent elimination of the cost of steam, the process employs two gases which are by-products of several chemical manufacturing processes and are available at a very low cost. In time also the process effects a considerable saving, the average mixing being completed in about a quarter of the time required by the hot process.

University Teachers' Salaries

THE first annual meeting of the Association of University Teachers, which in a little over a year has attracted a membership of 1,100, was held at Bedford College, on Saturday, June 19.

The President (Mr. R. D. Laurie, Aberystwyth University) said that statistics collected from 15 universities and university colleges showed that of 329 lecturers, 63 per cent. were receiving salaries not exceeding £200, and the salaries of another 30 per cent. were between £200 and £300. The average salary obtaining at most universities was only £171 per annum for the first five years, rising to £273 per annum for 35 years' service. The Association suggested that for the non-professional staff (junior lecturers on probation only) the salary should be £300 for the first year, rising by £50 per annum to £400 for the third year; for the general run of lecturers, £400 for the first year, rising by £50 per annum to £650 for the sixth year; for special lecturers, promoted by selection, £650 first year, rising to £900 for the sixth year; professional staff minimum £1,100. The latter minimum was placed at a figure which represented some adjustment of pre-war salaries to the increased cost of living. The whole position was reviewed the previous day at an informal conference between the Council of the Association and the heads of university institutions and representatives of governing bodies of the universities, and he believed that such very helpful discussions would pave the way to a solution. Professor J. Strong (Leeds University) was elected President.

A Scottish Pharmacist's Jubilee

Presentations to Mr. J. R. Hill

MR. JOHN RUTHERFORD HILL, resident secretary in Scotland of the Pharmaceutical Society of Great Britain, and hon. secretary of the Pharmaceutical Standing Committee (Scotland), was the recipient of several presentations by the pharmacists of Scotland at a complimentary dinner at Ferguson and Forresters Restaurant, Edinburgh, on Tuesday, June 15, over which Mr. T. G. Clydebank, chairman of the Standing Committee, presided.

Mr. W. I. Currie, Glasgow, ex-president of the Pharmaceutical Society of Great Britain, in making the presentation, said that Mr. Hill began his pharmaceutical career at the age of 15 with a chemist in Jedburgh. Thirty-five years ago he became a Fellow of the Botanical Society of Edinburgh; he was a member of the Society of Chemical Industry, and an Associate of the Faculty of Insurance. He had been resident secretary of the North British Branch of the Pharmaceutical Society of Great Britain for 35 years, and had to do with the extension of the Society's premises in Edinburgh in 1894 and the reconstruction of the local examinations, and he was the representative in Edinburgh under the 1808 Act which gave membership to the Society of Registered Chemists. As regarded the work of the North British Executive secretarial duties the pharmacists of Scotland were under a deep debt of gratitude to Mr. Hill for the enormous amount of labour he had accomplished. These duties had been undertaken willingly and ungrudgingly, and he had been supported by a staff who had done the work well and never grumbled which spoke well for the respect in which Mr. Hill was held by them.

Since the inception of the National Insurance Act of 1913 there was no man who had done so much work for pharmacy in this country as Mr. Rutherford Hill, and he had given his services practically free. Mr. Currie then asked Mr. Hill to accept this testimonial subscribed to by 1,113 pharmacists. The response, he said, to the proposal was immediate and spontaneous. He asked him first to accept a portrait of himself in oil, painted by Mr. John McGhie, Glasgow; secondly, a piece of silver plate with the inscription "Presented along with your portrait in oil from friends and admirers connected with pharmacy in cordial recognition of your faithful and brilliant services in the interests of the craft"; he was then asked to receive a receipt for Treasury bonds to the value of £1,800. It might not recompense him for the work he had done, but it might prove a useful commodity in times to come. There would be still something to come when expenses had been paid, which would be sent by cheque to him later on.

Mr. J. Rutherford Hill, in acknowledging the gifts, said he had served under 12 presidents of the Society and 15 vice-presidents. When he came into the room he felt like a criminal coming to justice to be tried, condemned, and punished according to his deserts. Their generosity was so great that they seemed to have forgotten the blunders, the mistakes, the stupid things he had done, and to remember only the few commendable actions he had stumbled upon in the doing of what was his proper duty. He had tried to carry out his duties without fear and without favour. It was not always easy and he had by no means succeeded, but the great thing was, he had found, to get a firm grip of the fundamental principles and to stick to them all the time. He referred to the new problems which were before them, and appealed to them to try to understand them, and in the spirit of good will and mutual trust to aim at the betterment of their craft. Mr. Hill hoped this was not a retiring gift. He was young still; there was some fight in him yet, and his highest honour and greatest privilege would be to give of the best that was in him for the betterment and advancement of the pharmacist craft for many years.

Cargo of Chemicals Lost

The Harrison-Rennie liner *Engineer*, bound for Mauritius with a cargo which included coke, carbide and saltpetre, was burnt to the water's edge in Lourenço Marques harbour on Saturday, June 19. It is believed the saltpetre ignited spontaneously, and owing to the presence of carbide it was deemed inadvisable to pour water on the flames. The vessel was towed into midstream, where a terrific explosion occurred, and the ship gradually sank until only her afterpart was visible. No lives were lost.

Catalogues Received

Brotherton & Co.

Two further "Hydros" booklets have been issued by Brotherton & Co.—"Rubol" and "Sugar Refining."

"Rubol" is a valuable bleach which need only be used in small quantities, a tablespoonful of "Rubol" and a half a spoonful of soda being sufficient for 10 gallons of water. Full directions are given for removing stains of every description.

Among the advantages claimed for "Hydros" for sugar refining are increased yield of crystallised sugar, easier working of the mass in the "centrifugal," better crystallisation of the syrups, considerable decolorising of the syrups, by which paler sugar and paler runnings are obtained, diminution of the resulting quantity of molasses, and better stability of polarisation.—City Chambers, Leeds.

R. Marsh

The pamphlet of accessories and fittings for gasworks and by-product plant manufactured by this firm contains illustrations and details of their non-rotative acid valves, acid taps for saturators with "Ironac" plugs, acid-resisting metal acid elevators, heavy cast-iron cocks for tar, liquor, steam and water, specially designed for gas works and chemical plant, heavy iron liquor gauges for sulphate of ammonia stills, centrifugal acid pumps of regulus metal, and all iron centrifugal liquor pumps.—39, Great Windmill Street, W.1.

William Douglas & Sons, Ltd.

The rotary pumps manufactured by William Douglas & Sons are well known in most chemical works, oil refineries, distilleries, soap works, margarine works, explosive factories, &c. List No. 102, recently published, gives detailed illustrated information regarding the Douglas concentric positive action rotary pump (heavy and light types), and the Conroy high-speed rotary pump, a special feature of the latter being that it can be direct-coupled to high-speed petrol or electric motors.—Douglas Wharf, Putney, S.W.15.

Chas. W. Cook, Ltd.

Owing to the diverse character and ever-increasing volume of their work, Messrs. Cook have discontinued the publication of a complete catalogue and the concise and well-illustrated booklets, dealing with the separate classes of scientific and mechanical apparatus manufactured, will be appreciated by customers. The firm make a feature of the design of apparatus and plant for special purposes.—174, Oxford Road, Manchester.

The Feculose Co.

The numerous uses to which "Feculose" may be applied are described in a booklet received from this firm, together with full directions for use. Feculose is a starch ester, possessing all the usual starch characteristics, with the additional advantages of perfect flexibility and lustre. As a starch derivative, it has the appearance of a fine starch powder, and is prepared by boiling in the same way as an ordinary starch. Unlike starch, it does not set on cooling, and consequently can be used hot or cold. It is not a gum or partially converted starch, but a pure soluble starch, possessing the essentials which these lack. It combines in itself the usual starch properties with the elasticity of the finest gelatine, and is an absolute substitute for the latter in all kinds of finishes. Being chemically pure, and a non-nitrogenous colloid, it will not injure the most delicate colours.—Glenfield Starch Works, Paisley.

Catalogues for Canada

In the annual report of the trade of Canada and Newfoundland it is stated that while the imports of advertising pamphlets, show cards, periodicals, price books, catalogues, &c., amounted to over \$800,000 before the war, less than \$100,000 represented the value of those from the United Kingdom. In 1918-19, the value of the imports of this class was over \$850,000, of which only about \$15,000 represented the value from the United Kingdom. It is natural that the proximity of the United States to Canada should in a matter of this kind operate as a favourable factor, but in Canadian as well as American communities the importance attached to publicity in connection with business suggests that United Kingdom manufacturers and exporters could with advantage pay more attention to supplying their representatives and customers with up-to-date matter illustrative of their products and of their business methods.

Manufacture of "Natalite" in Australia

RECOGNISING the possibilities for the manufacture of industrial alcohol in Australia, the Commonwealth Government has cancelled the excise duty on industrial denatured spirits, which was 1s. a gallon and, added to the high cost of denaturing, made the manufacture of alcohol unprofitable. The immediate result has been the formation of a company to manufacture the motor spirit known as Natalite. The spirit is to be manufactured in Papua, where 100 square miles of country have been reserved. The promoters, through the agency of their scientists, have discovered plants and trees in Papua which are estimated to yield 73 gallons of alcohol per ton. The company anticipates that, as soon as its plant has been put down it will be able to manufacture 5,500,000 gallons of Natalite a year. A system of replanting is to be taken in hand, which it is estimated will enable the output to be increased to 18,000,000 gallons a year. It is calculated that the retail price of the spirit will be 2s. per gallon. It is part of the company's policy later on to form co-operative companies throughout Australia, which will endeavour to arrange with the farmers to raise crops of sorghum, estimated to yield 80 gallons of alcohol to the ton. Under this proposal the farmers will be offered a share in the profits. If the scheme is successful Australia will probably be able to produce all the liquid fuel it requires. Last year £2,500,000 was paid by Australia for motor spirit.

Increased Demand for Nitrate

THE past few days have witnessed some striking developments in the market for nitrate of soda. On Monday evening a circular from Thomson, Aikman, junr., gave particulars of the extent to which the Nitrate Producers' Association had already disposed of 200,000 tons of the 1,100,000 tons offered at from 15s. 6d. to 17s. per quintal, according to position. It was announced on Thursday that further large sales have been made by the Association, some 860,000 tons having been sold. By far the largest proportion has been for December to April positions at 17s., 405,000 tons having been disposed of on these terms. Of the balance, 90,000 tons was for June-July at 15s. 6d., 65,000 tons for August at 15s. 11d., and 100,000 tons for September at 16s. 3d., October at 16s. 7d., and November at 16s. 10d. respectively. In view of this sudden expansion in demand, it is believed that the Association will withdraw the unsold balance—namely, 240,000 tons—and substitute offers of parcels aggregating 650,000 tons, of which 100,000 tons will be for July position at 15s. 6d., a similar amount for August at 15s. 11d., 50,000 tons for each of the months of September, October and November at 16s. 6d., 16s. 10d. and 17s. 1d. respectively, 50,000 monthly, December to March, at 17s. 3d., and 100,000 tons, April, at 17s.

Chemical Trade Inquiries

LOCALITY OF FIRM OR AGENT.	MATERIALS.						REF. No.
Switzerland ... (Aaran)	Oils	...	...	...	...	...	906
Buenos Aires ...	Glass	...	...	...	...	...	912
Toronto ...	Glue	...	...	...	...	...	874
Rome ...	Drugs ; Soap	...	...	...	...	...	943
Toronto ...	Drugs	...	...	...	...	...	924
Brussels ...	Chemicals	...	...	...	...	...	935

THE RUBBER GROWERS' ASSOCIATION have organised a competition with a view to extending the industrial uses of rubber. A sum of £5,000 is offered for ideas and suggestions in this connection, the amount to be divided into the following awards, namely, one prize of £1,000, three prizes of £500 each, ten prizes of £100 each, and a sum not exceeding £1,500 to be divided amongst the remaining competitors whose suggestions are considered to be practical, according to the relative value of the proposals. Full particulars of the competition may be obtained from the Rubber Growers' Association (Department C), 38, Eastcheap, E.C.3; the closing date of the competition is December 31 next.

Potash from Kelp

THE industry of extracting potash and other chemicals from kelp, a seaweed which grows along the Pacific Coast in large quantities, can be made profitable, according to Dr. J. W. Turrentine, of the United States Department of Agriculture. Dr. Turrentine is in charge of an experimental plant at Summerland, California, which was founded for the purpose of ascertaining if an American potash industry could be based on the giant seaweed as raw material. He says that it can if one takes into consideration the valuable by-products associated with the potash.

"This plant," Dr. Turrentine states, "has been from the beginning and of necessity is a producing plant, since only by producing potash can the cost of production be determined. Its initial products were the simplest that could be produced from kelp, and these have been produced steadily while refinements and elaboration of processes have been worked out and instituted. With refinements it was possible to separate the various products yielded from kelp and to determine the commercial value of each. It was soon established that potash alone at former prices could not pay the operating expenses of a kelp-potash plant, although this could probably be done at present prices for potash. It was seen that by-products would have to be obtained and sold to help to pay the cost of producing potash; and the production of by-products has been the main problem of this Governmental enterprise.

"To date, about 30 products, by-products and derivatives have been established as obtainable from kelp under the processes we employ. Some of these have commercial value and some have little or none. Some are obtainable in large quantity and cheaply, while the production of others probably will not pay more than the expense of that operation. Among the products are such materials as potash and various salts of potash, table salt, crystalline iodine and salts of iodine, ammonia in various forms, bleaching carbons of various grades, oils of different characteristics and degrees of usefulness, cresote and disinfectants and other derivatives prepared from it, pitch, prussian blue and combustible gas. Of these potash salts, iodine bleaching carbons, ammonia, oils and combustible gas are obtainable profitably. However, up to now only potash, iodine and bleaching carbons have been put on the commercial basis and soon are to be produced on the large scale as a part of the daily operation of the plant. The potash obtained is in the form of a high-grade potassium chloride, which is a white crystalline material resembling sugar, and with a taste similar to that of the familiar potash throat gargle. The iodine is yielded in the form of crystalline, sublimed iodine of high purity, which in that shape is a gray, sparkling crystalline material, and only needs to be dissolved in alcohol to produce the familiar tincture of iodine. The bleaching carbon is a black, uninteresting-looking material, but has a value twice that of potash on the basis of possible daily output, and is used in taking the colour out of various sorts of things, principally food products which cannot be bleached with chemicals. Thus it is of great value in industries where sugars and syrups are manufactured, particularly the new industry of malt syrup manufacturing which has grown up on the defunct brewing and distilling industry, and in bleaching edible oils, glycerine, organic acid, such as those manufactured from waste lemons and oranges, and similar materials. It is in great demand as taking the place of a carbon formerly imported from Europe and sold at a very high price.

"Thus, three products, potash, iodine and bleaching carbon, for which America is now dependent on foreign countries, are now being produced from kelp. This dependence will be entirely wiped out with respect to iodine and bleaching carbon, and certainly at least impaired with respect to potash. With these three products obtained from kelp and yielded in such quantity as economical processing admits, the kelp-potash industry can be put on a substantially profitable basis."

Mr. C. A. Wright

Mr. C. A. WRIGHT, hydrometallurgist for the Bureau of Mines at the Salt Lake Station, has resigned his position in order to engage in metallurgical work in Italy.

Action Over a Deal in Saccharine

Judgment for the Plaintiff

ON Tuesday, in the King's Bench Division, Mr. Justice Rowlatt, sitting in the Commercial Court, had before him an action by Mr. Nicol Leon Scaliaris, against E. Ofverberg & Co., of St. Swithin's Lane, E.C., to recover money paid in respect of a transaction over a deal in saccharine and damages for breach of contracts. The defendants denied liability.

The plaintiff, it was stated, purchased from the defendants, in August, 1918, 1,200 lb. saccharine, Monsanto brand, 550 strength f.o.b. New York, at 40 dollars per lb., less 2 per cent. discount. The plaintiff paid the defendants £13,382 for saccharine, £251 freight, and £362 for insurance and duty at 132s. a lb. The plaintiff's case was that the goods being landed at Glasgow, he had them dispatched to London, where they were sold to Gaston Williams & Wigmore, Ltd., with the description that it was Monsanto brand. It was then discovered that 400 lb. was not Monsanto brand, and this the sub-purchasers rejected. The matter went to arbitration and came before Mr. Justice Bailhache in the form of a special case, who affirmed the arbitrator's award in favour of the sub-purchasers, and under that award the plaintiff had paid the sub-purchasers some £4,500. The plaintiff claimed this amount from the defendants, and £335 loss of profit.

The defendants said that the plaintiff had the right to examine at Glasgow. Plaintiff took possession at Glasgow and failed to examine before selling. Having failed to examine then, defendants said the plaintiff could not complain later when the goods arrived in London. It was no answer to say that it was more convenient to examine in London.

His Lordship, in giving judgment, said in this case the buyer, in his opinion, was entitled to reject these goods. The contract was for saccharine of the Monsanto brand, and the goods so far as those rejected were not of Monsanto brand in this sense. They were, in fact, manufactured by the Monsanto people, but they had been sold for shipment to another firm and they put their label upon them. That was a claim to their title. Goods of manufacturers' brand meant goods or brand supplied by the manufacturers, so he thought the goods were not the goods bought. The next question was whether the buyer was not too late in his rejection of the goods, and that turned upon the very special circumstances in this case. The goods came to Glasgow, though put on board for Liverpool. Glasgow was not a saccharine port. The saccharine was put off its route by going to Glasgow, and he had to consider whether the buyer under those conditions had a reasonable opportunity of examining them in the ordinary course of business. Under the circumstances of this case he thought the buyer could treat the goods as still in transit as between himself and his purchaser for this purpose till they got to London. He found that the plaintiff did examine at the first reasonable opportunity and he was entitled to reject. Judgment was given for plaintiff for a sum to be agreed between the parties.

Recent Wills

Dr. W. H. Trail, formerly examiner in botany to the Pharmaceutical Society	£15,072
Mr. E. D. Rough, Wellford, Broxburn, Linlithgow, chemical and manure manufacturer	£76,009
Mr. A. Izat, of Muckhartand, Perth, and of Earl's Court Square, London, a director of the Bengal Iron and Steel Co., Ltd., personal estate	£160,941
Mr. J. A. Faulkner, of Marseilles, a director of Lever Brothers Associated Companies at Marseilles (net personality, £1,682)	£1,816
Mr. J. Metcalf, of Clayton-le-Moors, Accrington, Lancs., chemical manufacturers	£13,860
Mr. R. Burnard, of Stoke Rectory, near Teignmouth, of Burnard and Alger, Ltd., chemical manufacturers	£35,677
Mr. J. de Behr Achison-Gray, of Newcastle-on-Tyne, of Currie and Hutchinson, chemical manufacturers, of St. Mary's Place, Newcastle	£8,180
Mr. T. S. Boulton, of Upminster, Essex, late secretary of Burt, Boulton and Haywood, Ltd., manufacturing chemists, London Wall, E.C.	£6,379
Mr. G. MacFarlane Reid, of Prestwick, Ayrshire, a director of the Sulphide Corporation, Ltd.	£31,839

Chemical Matters in Parliament

Non-Ferrous Miners' Wages.

In reply to Mr. Jesson (House of Commons, June 16), who drew attention to the low rate of wages prevailing among lead, zinc and tin miners in consequence of the cheap foreign and coloured labour employed in mines outside this country, Dr. Macnamara stated that the Committee which had investigated the whole economic position of the non-ferrous mining industry in this country had made certain recommendations which were under consideration, and in the meantime arbitration proceedings in respect of the wages of the miners concerned had been held before the Industrial Court, to which the two sides of the Interim Reconstruction Committee for the Non-Ferrous Mining Industry were parties. The award of the Court was expected shortly.

Mr. Bridgeman, in reply to further questions by Mr. Jesson, stated: There are export duties on tin ore and on smelted tin in the Federated Malay States and the non-Federated States, but not in the Straits Settlements. In the case of tin ore, the duty is less when export takes place under guarantee that the ore will be smelted in the Straits Settlements, Australia, or the United Kingdom. In Nigeria there is a royalty on the export of tin, and in Bolivia an export duty on tin ore. The duties generally depend on the price of tin.

Oil Concessions in Mesopotamia

In reply to questions by Major Barnes (House of Commons, June 21) regarding the granting of concessions for oil-getting in Mesopotamia, Mr. Bonar Law stated that the terms of the mandate had not yet been formulated, and it was, therefore, impossible to state the conditions which it would impose. Until the future government of Mesopotamia was constituted there could exist no authority competent to grant new concessions.

Oil: Reciprocal Arrangements with France

Mr. Kellaway, in reply to Mr. Doyle (House of Commons, June 21), stated that reciprocal arrangements had been entered into with France in regard to oil supplies. No restriction had been placed on the use to which oil covered by this arrangement was to be put. No agreements were in force with other European powers.

German Patent Licences

Sir Robert Horne, replying to questions by Mr. Manville (House of Commons, June 21) with reference to the renewal of patent licences granted by German firms to English firms, stated that a British company, which was at the outbreak of war a licensee of a German company under a German patent, had the right under Article 310 of the Treaty of Peace to demand from the German company, within six months after the coming into force of the Treaty, the grant of a new licence, the conditions of which, in default of agreement between the parties, should be fixed by the mixed arbitral tribunal. It was not yet decided at what place or places that tribunal would sit; it was being established and would shortly be fully constituted.

Japanese Quinine Factory

A JAPANESE syndicate is negotiating for a large site at Preanger, Java, where the cinchona estates are located. It is said that the syndicate will establish a QUININE FACTORY near Bandoeng, Java, and expect to have it in operation by 1923.

Compulsory Gas Scrubbing

Sir W. JOYNSON-HICKS moved an amendment to the GAS REGULATION BILL, which came before the Standing Committee of the House of Commons on Tuesday, Sir W. Pearce in the chair. The effect of the amendment was to compel gas companies to scrub their gas and extract benzol from it, in the interests, not of the pleasure-seeking motorists, but of the transport trade of the country. During the war Parliament passed a bill compelling gas companies to scrub their gas in order to produce benzol and toluol. Before the war 20,000,000 gallons of benzol were produced in this country. During the war that figure rose to 40,000,000, but since the war it had dropped to 20,000,000 gallons, of which the gas companies produced only 3,000,000 gallons. The opponents of the amendment held that the gas consumers would suffer by having inferior gas, and the amendment was rejected.

Hongkong Chemical Trade Returns

Figures for the December Quarter

THE Hong Kong trade returns for the December quarter, 1919, show that imports of chemicals and drugs during that period were valued at £216,717, the chief individual items being saltpetre (£56,424), and soda ash (£26,013). Great Britain's share in this trade amounted to £45,333. The total imports of paints amounted to £78,848, of which almost half came from the United Kingdom. Soap imports were valued at £80,818, £46,096 representing Japan's share in the trade. Japanese competition is increasingly keen, the figure given above exceeding by about £3,000 the total value of Japanese imports of soap into Hong Kong in 1918.

Imports of aniline dyes were valued at £22,936, and of artificial indigo at £15,857, the British share in this total being only £86. Whilst the above figures show that the trade at Hongkong is still comparatively unimportant, Mr. H. J. Brett, commercial secretary to H.M. Legation at Peking, states that it is capable of very considerable expansion, and it is hoped that British manufacturers will make more vigorous efforts to share in it. American dyes are already well-established in this market, and some small shipments of German colours have already passed through en route for Canton, so it is highly desirable that there should be no unnecessary delay in introducing the products of British factories. In this connection it is encouraging to note that within the past few months the corporation most largely interested in the British dye industry has established an agency in Hongkong, and it is understood that its products have met with a very favourable reception.

Exports

During the December quarter Hongkong exported camphor to the value of £406,302 as against £23,423 during the whole of the year 1918. This enormous increase is said to be chiefly due to strong anti-Japanese feeling at Poochow, the centre of the camphor industry, where in normal times Japanese firms monopolise the trade. Sentiment against Japan was accentuated owing to certain incidents which occurred in the autumn of last year, and it is suggested that as one result of this feeling the bulk of the supplies of camphor available were shipped to Hongkong for sale instead of being disposed of locally. The strong demand for camphor has also led to more attention being devoted to the industry in other parts of South China, and efforts are being made to increase production in the West River area.

Exports of peanut oil were valued at £233,442, of which £72,187 represents the value of shipments to the United States; the Straits Settlements and the United Kingdom are the other principal customers, with £45,771 and £20,840 respectively. Wood oil exports amounted to £95,514, more than half going to the United Kingdom.

National Physical Laboratory

THE annual visit to the National Physical Laboratory, Teddington, by the general board took place on Tuesday, when Sir Joseph Thomson, president of the Royal Society and chairman of the board, Sir Arthur Schuster, vice-chairman, and other members of the board welcomed a large and distinguished gathering at the laboratory. The present director of the laboratory is Sir Joseph Petavel, who succeeded Sir Richard Glazebrook last September. The normal work of the laboratory was largely displaced during the war by special work required for war purposes; but return has now been made to the discharge of pre-war functions, one of the most important of which is the maintenance of accurate standards of measurement, in which there is much leeway to be made up. The laboratory is now organised in seven departments—physics, engineering, aeronautics, metallurgy, electricity, metrology (measurements of length, area, volume, mass and time), and the William Froude national tank for tests of ship models. The physics department includes divisions for heat and thermometry, optics, radium, and X-ray work, and tide prediction, and the metrology department is also responsible for the volumetric testing of scientific glassware, which has recently been undertaken on a more extensive scale. The members of the general board included Sir George Beilby, Sir W. H. Bragg, Sir John Dewrance, Professor Henry Louis, the Hon. Sir Charles Parsons. The company also included Sir Richard Glazebrook and Sir Robert Hadfield.

From Week to Week

FERTILISERS may in future be exported from South Africa only under permit.

The export tax on BOHEMIAN GLASS will be reduced to 2 per cent. as from July 1.

The revised text of the Board of Trade's EXPORT CREDITS SCHEME is issued as a White Paper (Cmd. 732.)

PROFESSOR F. W. BURSTALL has been elected Dean of the Faculty of Science at Birmingham University, in succession to Sir John Cadman.

Supplies of oxygen for military hospitals will, in future, be obtained from the works of the BRITISH OXYGEN Co. situated nearest to the hospital making the demand.

BRUNNER, MOND & Co., LTD., have promised to take £100,000 worth of Housing Bonds in connection with Nantwich Rural District Council's housing scheme.

MR. S. N. JENKINSON, managing director of Webb's Crystal Glass Co., Ltd., has been appointed chairman of the Council of the Pottery and Glass Trades Benevolent Institution.

MR. A. D. RITCHIE, M.A. (St. Andrews), Senior Scholar, Trinity College, Cambridge, has been appointed assistant lecturer in chemical physiology at Manchester University.

On the occasion of the laying of the foundation stone of the new chemistry department of EDINBURGH UNIVERSITY during the Royal visit to the Scottish capital the Queen has consented to accept the hon. degree of LL.D.

A seventh death has occurred as the result of the naphtha explosion and fire at the DUNLOP RUBBER Co.'s works at Aston Cross on May 21, William Vokes (24) having died of his injuries at the General Hospital.

THE ROYAL AUTOMOBILE CLUB has under consideration a trial of trials of vaporisers and other apparatus by which motor vehicle engines may be operated with alcohol, heavy oils, or fuels—solid or liquid—other than petroleum spirit or benzol.

THE FOLLOWING MAY NOW BE EXPORTED FROM SWEDEN: Benzol oils, terpineol, safrol and menthol, heliotropin, cumarin, musk, and other unspecified scented substances, natural or artificial, for use in the manufacture of perfumery, not being essential vegetable oils; rose and orange water.

By the explosion of a benzine still in the works of the SOWLER FINE CHEMICAL LABORATORY at Storrie's Alley, Leith, on Tuesday, the roof of a building 20 ft. square was blown off, the walls were damaged, and two men, Peter McDonald (26) and Ronald Wallace (17), were severely burned.

An interesting experiment, attended with success, was recently inaugurated by the Automobile Association and Motor Union, in the provision of a BENZOL FILLING STATION on the roadside on the Bath Road, near Newbury. This week a similar station has been opened in the Midlands, at Coombe Hill, on the road between Gloucester and Worcester.

THE work of the following research students has been approved of by Cambridge University as of merit of original research: A. W. Smith (Christ's College), G. A. Newgrass (Trinity College), K. H. Saunders (St. John's College), R. H. Vernon (Caius College), J. E. G. Harris (Jesus College), R. E. Priestley (Christ's College), W. R. Fearon and G. L. Jones (Emmanuel College).

M. ADOLPHE CARNOT, the French scientist, who died in his 82nd year on Sunday, was a member of the Academy of Sciences, and a younger brother of President Carnot. His scientific work lay mainly in the field of metallurgy. He was the author of the well-known "Tracté d'Analyses des Substances Minérales," and of numerous inventions recorded in the annals of the Academy of Sciences.

THE COTTON GROWING ASSOCIATION OF NIGERIA, which since 1916 has shown a profit in its working, and therefore no longer receives a Government subsidy, hopes to be able to extend the branch of the industry dealing with the crushing of cotton seed for the extraction of oil. Oil extraction is at present confined to the Ibadan Ginners, which can only crush from three to three and a-half tons of seed per day.

The deserted village of Havanna, in Cheshire, which was once given up to silk spinning, and later to the manufacture of cigars, has been taken on lease—mill, offices, outbuildings and cottages—by a firm interested in certain NEW CHEMICAL PRO-

CESSES. One of the principals of the firm has business connections in Manchester, but the exact nature of the operations to be carried out at Havanna has not yet been made known.

SIR JESSE BOOT, who recently celebrated his 70th birthday, has decided to present a pleasure park to his native city of Nottingham. It will include a winter garden, a crescent of dwellings, and a campanile possessing a carillon of bells "in gratitude for a long and happy life." Sir Jesse has already purchased a site of 36 acres, on the banks of the Trent, and in addition he is prepared to contribute a sum of £250,000 to complete his gift.

LIEUT.-COL. ROBERT STANDEN, in a letter to the press, refers to the immense quantities of valuable "phosphatic chalk" located in France throughout the department of the Somme during the war, urges that it should be the policy of the Government to assist France in exploiting this inexhaustible supply, and suggests that a portion of the output could be sent to this country, where the mineral does not exist and the price of superphosphates is high, in exchange for coal and coal products, and thus assist in the re-establishment of the value of the franc.

PROFESSOR I. M. HEILBRON, D.S.O., D.Sc., Ph.D., was appointed to the Chair of Organic Chemistry at Liverpool University on Tuesday. Professor Heilbron was educated and was awarded the James Young Exhibition in 1907 at the Royal Technical College, Glasgow, where, from 1909-1914, he held the post of lecturer in organic chemistry. He was appointed professor on his return from the Army in October, 1919. He was mentioned in despatches, and awarded the D.S.O., the Gold Cross of the Greek Order of the Redeemer, and the French Medaille d'Honneur.

A transaction involving the sale of 75,000 TONS OF COPPER by American suppliers to French merchants on credits amounting to \$35,000,000, is announced. Shortly after the armistice the stock of copper in the United States amounted to 1,000,000,000 lb. (over 446,000 tons), which had been produced on a wage basis presupposing a selling price of 18. 3d. per lb. (£140 a ton). The present price of copper in London is about £86 a ton. Particular importance is attached to the fact that this is the first time the Federal Reserve Bank has agreed to grant a loan to American business men on the sole guarantee of the French banks.

By a RUMANIAN ROYAL DECREE, all oil products required for home consumption which hitherto have been controlled by the owners themselves—i.e., the producers and refiners—now pass under control of the State, together with all kinds of means of transport, storage, pipe lines, tankers, motor wagons, reservoirs and oil installations necessary for the home distribution of oil. The State has ceded the control of all the above for five years, with option to prolong to a Rumanian company specially founded for the purpose, composed according to its articles of association, of eight Rumanian engineers, who have subscribed the capital of 100,000,000 lei (£4,000,000).

An interesting ceremony was performed on Tuesday at the new glass works at Canning Town, one of the great factories being erected in various parts of the country by British Glass Industries, Ltd. The first furnace to be put into active operation was "christened" by Lady Towle, wife of Sir Francis Towle, one of the directors of the company. The opening of the furnace represents the coming into operation of the first of the nine units at the CANNING TOWN WORKS, which are the largest in the country. For many weeks past a small preliminary plant has been producing 18 glass jars a minute, day and night. The total output of bottles or jars, when the whole nine units are in operation, will be 600,000 a day.

It is stated that the MAGADI SODA COMPANY, which is being managed and directed by Marcus Samuel & Co., has now completed operations sufficiently to begin exports in August. The company has been much hindered in its operations since its formation. The outbreak of war was followed by the requisitioning of the company's branch line of 90 miles, which connects Lake Magadi with the Uganda Railway, and when it was returned to the company there was much delay in getting delivery from home of necessary machinery. The company has unlimited resources of natural soda, as Lake Magadi is estimated to contain deposits of about 40 million tons, and the working costs of putting the refined product on the markets are very low.

American Notes

The Chemists' Club

At the annual election of the Chemists' Club in New York last month, Mr. Ellwood Hendrick was elected president for the coming year, and Messrs. W. F. Hoffmann and V. G. Bloede, resident and non-resident vice-presidents respectively.

Annual Meeting of the Electrochemical Society

At the annual meeting of the Electrochemical Society Mr. Walter S. Landis, chief technologist of the American Cyanamid Co., New York, was elected president for the ensuing year. Dr. W. D. Bancroft, of Cornell University, the retiring president, gave an address on "Contact Analysis," which was followed by a symposium on "Colloid Chemistry."

U.S. Camphor Allotment from Japan

The Japan camphor monopoly office has guaranteed a minimum allotment of camphor to the United States for the period of May and June of 327,386 lb., with the possibility of permitting a maximum allotment of 349,000 lb. The prices per cwt. are given as 227 yen (\$113.16) for grade B, and 255 yen (\$127.12) for grade BB. The previous allotment was 379,635 lb., at 557s. per cwt.

Cryogenic Laboratory for Bureau of Mines

In connection with the work on helium which is being carried out by the Bureau of Mines a cryogenic laboratory is to be established at Washington. The funds for equipping the laboratory and conducting the work are being allotted from appropriations made to the Army and Navy Departments. The work in the new laboratory will be directed by Mr. R. B. Moore, chief chemist of the Bureau of Mines.

Leasing of Phosphate Deposits

Secretary Payne has approved rules and regulations for the leasing of phosphate deposits in the public lands. About 2,500,000 acres of lands in Wyoming, Idaho, Utah and Montana have been withdrawn from disposition for a number of years awaiting legislation recently enacted by Congress. These regulations will open them to lease in areas not exceeding 2,560 acres each and should add largely to the fertiliser supply of the United States.

New Section of the A.C.S.

A new section of the American Chemical Society was formed last month. The section is to be known as the Savannah Section and embraces the counties of Chatham, Effingham, Bryan, Liberty, Wayne, McIntosh, Glynn and Camden, Ga. The following officers have been elected to serve for the balance of the year: President, J. J. McManus; vice-president, Maurice Siegel; secretary-treasurer, Herbert P. Strack; councillor, Dr. F. N. Smalley.

Cotton Seed Returns

The amount of cotton seed crushed in American mills during the nine-month period, August 1, 1919, to April 30, 1920, was 3,883,368 tons in 1920, and 4,084,710 tons in 1919. There was 103,829 tons on hand at the mills on April 30, 1920, as against 173,866 tons on April 30, 1919. Exports during this period totalled 125,826,783 lb. of oil, 210,641 tons of cake and meal, and 40,136 running bales of lint in 1920, against 120,347,205 lb. of oil, 119,054 tons of cake and meal, and 65,046 running bales of lint in 1919.

Chicle Gum in British Guiana

Announcement is made of the discovery of chicle-producing trees in British Guiana. Prospecting expeditions sent into the interior have recently returned to Georgetown with 600 lb. of chicle, and preparations are now being made by the discoverer, who holds a concessional right over 6,200 square miles of territory, to send out four prospecting parties in order to continue investigations and ascertain the capacity of the tract. Territory thus far examined is reported to be capable of yielding 200,000 lb. of gum annually.

The Du Pont Balance Sheet

The balance-sheet of E. I. du Pont de Nemours & Co., as at December 31 last, shows:—

	1919	1918
Merchandise	\$40,061,136	\$68,648,072
Securities	67,462,629	23,011,436
Accounts payable	15,203,973	60,375,685
Reserves	32,902,152	62,040,674
Surplus	71,978,504	60,199,116
Total assets, liabilities	\$240,046,766	\$308,289,652

Potash Plant at New Brunswick

The Eastern Potash Corporation is building a plant at New Brunswick, N. J., capable of producing 30,000 to 40,000 tons of potash annually from the green-sand. An experimental plant was first operated to prove the practicability of the plan. Mr. W. Schmidtman, president of the company, and Mr. T. C. Meadows, general manager, are experts in the manufacture of potash. The estimated cost of the plant, which occupies a site of 105 acres, is \$2,500,000. The company will employ 200 men and 1,000 tons of raw material will be handled daily.

Experiment Station for Non-ferrous Metals

It is understood that one of the new mining experiment stations for which an appropriation will probably be made will be devoted largely to the non-ferrous metals. As these metals represent the large raw-material supplies for the chemical industries, it is felt that intensive research of the character provided at mining experiment stations should be arranged for. At present the Bureau of Mines is conducting six mining experiment stations. Four more have been authorised, but no appropriation for their establishment has yet been made. The sundry civil bill, which is about to become law, is expected to provide funds for at least two additional stations.

Chemical Industries Exhibition

The National Exposition of Chemical Industries is to be held this year in the Grand Central Palace, New York, from September 20-25. It is stated that this exhibition, which is the sixth, will be the largest yet held, 358 exhibitors having already engaged space. In 1915 the first exhibition was composed of 83 exhibitors, the second increased to 188, the third to 288, the fourth to 334, and in the fifth, in which the available space was much restricted, exhibitors were held to a minimum of 351. This year another floor has been obtained in the Grand Central Palace, giving four floors. There will be three special sections this year—the electric furnace section, the fuel economy section, and a materials handling section. The last two are new sections. The programme will include a series of conferences, on problems specially related to the exhibits, and a special group will be devoted to chemical engineering.

The Magnesite Industry in 1919

The production of magnesite in the United States in 1919 fell off about 30 per cent., but was nevertheless greater than in any year prior to 1917. Mr. F. McN. Hamilton, State mineralogist, estimates that California produced 42,000 tons of crude magnesite, or about one-half the production in 1918. According to Mr. R. W. Stone, of the U.S. Geological Survey, producers in the State of Washington shipped about 55,000 tons of dead-burned magnesite, which is equivalent to about 120,000 tons of crude magnesite, or 20 per cent. less than in 1918. The output of crude magnesite in the country in 1919 was therefore about 162,000 tons.

The imports of magnesite in 1919, reported by the Bureau of Foreign and Domestic Commerce, comprised 6,381 short tons of crude magnesite, valued at \$103,311, and 9,471 short tons of calcined magnesite, valued at \$270,721, or a total value of \$374,032. These imports came from the following countries:

	Short Tons.	Value.
Austria-Hungary ...	2,650	\$64,933
Italy ...	2,416	62,753
Germany ...	34	2,023
England ...	29	4,849
Scotland ...	94	9,369
Canada ...	8,066	216,605
Mexico ...	2,563	13,500
	15,852	\$374,032

Joint Stock Companies

At the expiration of three months from June 11, the under-mentioned companies will, unless cause is shown to the contrary, be struck off the Register, and the companies will be dissolved:—

Boryslaw Oil Trust, Ltd.
Chemicals and Saccharin, Ltd.
General Roumanian Petroleum Co., Ltd.
Gurlyn Consolidated Tin Mines (Cornwall), Ltd.
Irish China Clay and Resources, Ltd.
Premier Galician Petroleum Syndicate, Ltd.

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Patent Literature

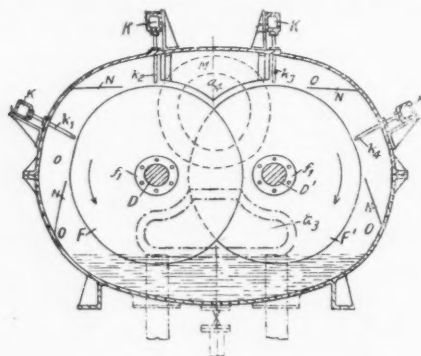
Abstracts of Complete Specifications

- 124,195. ACETIC ACID FROM PARALDEHYDE, MANUFACTURE OF. Soc. des Acieries et Forges de Firminy, Paris. International Convention date (France), March 13, 1918.

A layer of paraldehyde is floated on a 10 per cent. solution of sulphuric acid, which may contain a very small amount of salts of manganese, cerium, molybdenum, vanadium, or the like, which contain oxygen. The acid is electrolysed using an anode of magnetite or platinum, and a cathode of gas-retort carbon. The paraldehyde is oxidised into acetic acid, which is distilled off when a high concentration is reached. The paraldehyde may be made from acetylene. If ethyl acetate is required, alcohol may be added to the solution, and it is then distilled in a rectifying apparatus.

- 143,291. SUBJECTING AIR, GAS OR VAPOURS TO THE ACTION OF LIQUID IN THE FORM OF SPRAY, APPARATUS FOR. C. H. Fowler, Manor Road, Great Crosby, Lancashire. Application date, February 14, 1919.

The gas to be treated is admitted into the casing of the Apparatus (which is shown in transverse vertical section) at one end by the opening a^3 , and withdrawn at the other end by the opening a^4 . The casing is oval in cross-section and carries a pair of parallel horizontal shafts D, D', each of which is provided with a set of closely spaced transverse discs F, F'. The discs of the two sets overlap radially, each disc passing between a pair of discs on the other shaft. The liquid is supplied to the two sets of discs by sets of radial nozzles h^1 , h^2 and h^3 , h^4 respectively, arranged in four longitudinal rows as shown. The nozzles are spaced so that the set h^1 supplies one set of alternate spaces, and the other set h^2 supplies the other set



143,291

of alternate spaces of the discs K, while the nozzles h^3 , h^4 perform a similar function with regard to the discs K'. The liquid thus impinges on the separating collars f^1 and splashes on the discs near their centres, so that as the discs rotate, their surfaces are covered with a film of liquid moving under the action of centrifugal force. The liquid is then propelled tangentially across the annular space O through which the gas is passing. Liquid collects in the bottom of the casing, and is picked up by the discs on each shaft during their rotation in the direction shown by the arrows, and projected into the spaces between the discs on the other shaft. The liquid thus picked up augments that supplied by the nozzles, and the quantity of liquid required is thus reduced. Further, accumulation of solid matter on the surfaces of the discs is avoided. Baffles M inclined to the axes of the shafts, and tangential baffles N may be provided in the casing.

- 143,321. OILS, FATS AND THE LIKE, TREATMENT OF. G. Calvert, Elmhurst, Arlington Road, Twickenham Park, Middlesex. Application date, February 21, 1919.

The object is to convert the inedible matter such as fatty acids in oils, fats and the like into edible substances. A quantity of palm oil, coconut oil or the like, is mixed with twice its weight of glycerine, and a finely divided substance, such as kieselsol with or without a deposit of titanium dioxide. The mixture is heated to 140°C . with continuous agitation

until the free fatty acids are converted into neutral glycerides: about 15 hours are required for a fatty acid content of 20 per cent. The product is settled and decanted, and the unaltered glycerine may be used for treating a further quantity of oil. The process may be carried out under a vacuum of 28 in., or in a current of dry, inert gas to remove water. The agitation of the mixture may alternatively be effected by spraying it into the heating vessel. The process may be carried out simultaneously with hydrogenation or other treatment.

- 143,341. AMMONIA, SYNTHETIC PRODUCTION OF. E. K. Rideal and A. G. Tarrant, University College, Gower Place, London, W.C.1. Application date, March 10, 1919.

The apparatus is for recording the percentage of ammonia in the circulating gases in the synthesis of ammonia, in order to detect poisoning of the catalyst and to adjust the temperature to the point of maximum activity. Distilled water flows through an absorbing vessel at a constant rate, and the gas also passes into the vessel through a Venturi or other flow meter. The ammonia is absorbed, and the solution passes into an electrolytic cell where its electrical conductivity is measured and recorded. The conductivity is a measure of the proportion of ammonia.

- 143,353. GAS PRODUCERS. D. J. Smith, 40, Woodberry Grove, Finsbury Park, London, N.4. Application date, April 5, 1919.

A thermostat or thermocouple is placed in the gas discharge pipe, in the water of the vaporiser or boiler, and in the incandescent zone of the wall of the firebox. These thermostats control electrically and automatically the blowing fan, the supply of water to the vaporiser or boiler, the supply of steam to the fuel, or other functions of the producer.

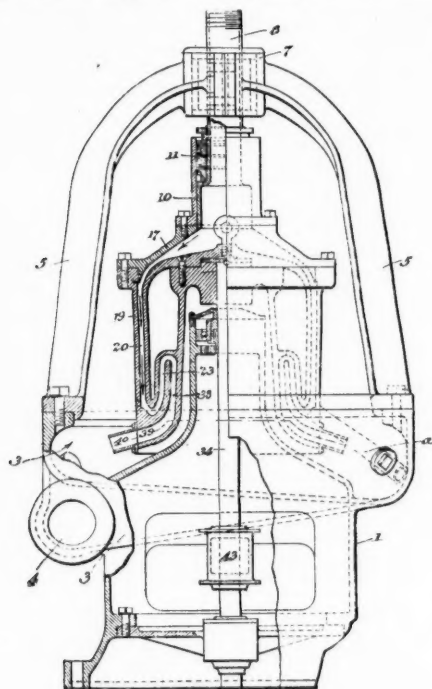
- 143,361. GAS FROM COAL AND/OR THE LIKE, MEANS FOR GENERATING. J. H. Corthesy, 50, Thornhill Houses, Barnsbury, London, N.1, and S. T. S. Castelli, 18, Prince of Wales Terrace, Kensington, London, W.8. Application date, April 12, 1919.

Powdered fuel is delivered from a hopper into a conduit through which a current of air is directed, and is subjected to the action of a Bunsen flame. The mixture passes into a larger chamber into which steam is also passed, and a mixture of carbon dioxide and hydrogen is thus produced. The gaseous mixture then flows downwards through incandescent fuel in a perforated container so that the carbon dioxide is converted into monoxide, and the resulting mixture passes to a scrubber or cleaner. The space through which the hot gas flows immediately below the incandescent fuel is surrounded by a water jacket which supplies the necessary steam. Part of the gas generated may be used for supplying the Bunsen burner, and the valves controlling the gas and air supplies may be controlled by a single handle.

- 143,383. CENTRIFUGAL AMALGAMATOR AND METHOD OF OBTAINING METAL FROM ORE. S. G. Musser, 521, I. W. Hellman Building, Los Angeles, Cal., U.S.A. Application date, May 9, 1919.

The object is to minimise loss and leakage of mercury and to effect the maximum amalgamation. The base member 1 is provided with a helical passage 3 having a discharge opening 4, and carries a standard 5 forming a boss 7 at its upper end, through which the inlet tube 8 passes. Packing 11 is arranged between the fixed tube 8 and the rotating sleeve 10, which is attached to the conical member 17 and shell 19. Annular passages 20, 23, 38, are provided in the rotating member, and the whole is carried by the vertical shaft 34. Mercury is run into the channel 20, and the shell is rotated by power applied to the pulley 43, so that the mercury forms an annular sheet in the passage 20. The crushed metalliferous ore is supplied through the tube 8 under pressure and passes downwards through the mercury and thence through the passages 23, 38, to a number of tapering discharge nozzles 39, 40. These nozzles are arranged so as to discharge in a direction opposite to that of the rotation of the shell and the material is discharged into the helical passage 3, which is constructed so that the rotation is in the direction in which the passage ascends,

The use of centrifugal force to assist the discharge of the tailings prevents clogging of the passages and minimises the



143,383

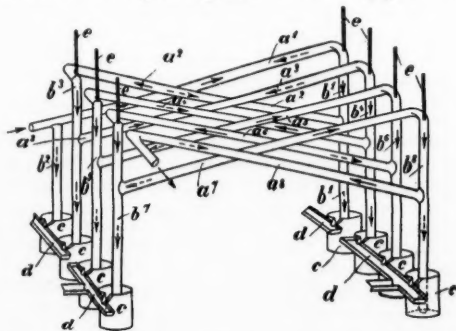
pressure necessary to force the ore through the apparatus. The amalgam may be removed periodically through pipes *a* when the apparatus is at rest.

- 143,392. BENZOIC ACID, PRODUCTION OF. W. P. Thompson, Liverpool. (From Les Etablissements Poulenc Frères, 92, Rue Vieille du Temple, Paris, J. B. Senderens, 69, Avenue de Paris, Choisy-le-Roi, and J. Aboulenc, 15, Avenue d'Ormesson, Choisy-le-Roi, France). Application date, May 27, 1919.

Toluene is oxidised to benzoic acid by means of a mixture of sulphuric acid of 52-53°B. and manganese dioxide. The reaction is started by heating the mixture to 50°C. and then proceeds exothermally. The temperature is kept down to 60°-70°C. by cooling, and under these conditions benzoic acid with only a small proportion of benzoic aldehyde and carbon dioxide are formed. The temperature is kept at the highest point possible, compatible with the evolution of the minimum amount of carbon dioxide.

- 143,428. CONDENSER FOR DISTILLING APPARATUS. J. H. Zaackel, Lübeck, Germany. Application date, July 16, 1919.

The mixture of vapours passes into the pipe *a*¹ where a



143,428

portion condenses and flows back into the vertical pipe *b*², and thence into a collecting vessel *c*. The remaining vapour

passes downwards through the pipe *b*¹ and then upwards through the pipe *a*², where a further portion condenses and flows back into the vertical pipe *b*¹, and thence into the collecting vessel below, from which it flows into a collecting trough *d*. The operation continues in this manner, the cooling increasing from *a*¹ to *a*², and the volatility of the condensate also increasing. Any combination of condensates may be obtained by combining the channels *d* as required. The flow of the vapour is shown by the full-line arrows, and that of the condensate by the dotted-line arrows. Thermometers *e* may be provided at the upper ends of the inclined condensing pipes.

NOTE.—The following specifications which are now accepted, were abstracted when they became open to inspection under the International Convention: 131,289 (Transforming sodium monochromate into bichromate or chromic acid); 135,217 (Continuous coke ovens); and 139,153 (Oxylaldehydes and their ethers). See THE CHEMICAL AGE, Vol. I., page 530; Vol. II., page 130; and Vol. II., page 510.

International Specifications Not Yet Accepted

- 141,661. SULPHUR BURNERS. T. A. Clayton, 5, Rue Henri de Bornier, Paris. International Convention date, April 11, 1919.

Secondary air is delivered into the burning chamber between horizontal baffles above the sulphur container. A baffle is provided at the air inlet to prevent back flow of gases into the combustion chamber.

- 141,666. ALUMINATES. Rochette Frères, Savoy, France. International Convention date, April 16, 1919.

Bauxite is heated with lime and carbon, or silicon, aluminium or calcium carbide in an electric furnace to reduce all foreign oxides. Ferrous alloys separate at the bottom of the furnace, and calcium aluminate free from other oxides is obtained. It may be converted into alkali metal aluminates by treating with the corresponding alkali metal carbonate.

- 141,688. ZINC AND CADMIUM, OBTAINING. Electrolytic Zinc Co. of Australasia Proprietary, Ltd., 360, Collins Street, Melbourne. International Convention date, April 4, 1919.

Sulphate solutions are prepared from ores containing zinc and cadmium, with or without copper and cobalt, and zinc dust, with or without a copper salt, is added. The precipitate, if free from cobalt, is oxidised and leached with sufficient sulphuric acid to dissolve zinc and cadmium, but not copper. Copper may be smelted from the residue. Alternatively, zinc only may be dissolved from the precipitate, and the residue further treated to dissolve cadmium, which is precipitated by zinc dust. The whole process and its modification when cobalt is present are described in detail.

- 141,689. CRACKING OILS. J. H. Adams, 164, Argyle Road, Brooklyn, New York. International Convention date, April 11, 1919.

Oil is preheated, and then cracked by passing it through a passage of narrow cross section between an externally-heated vertical cylinder and an inner rotating core carrying a helical rib to agitate the oil. The oil may pass upwards or downwards through the cylinder, and the cracked vapour rises through a body of oil in a chamber above, and then passes to a separator and condenser. The liquid residue is returned to the cracking chamber.

- 141,714. SYNTHETIC TANNING AGENTS. Rohm & Haas Co., 40, North Front Street, Philadelphia, Pa., U.S.A. (Assignees of A. Koetzle, 519, West 160th Street, New York). International Convention date, April 12, 1919.

A tanning agent is produced by dissolving *p*-sulphosalicylic acid in strong sulphuric acid, adding formaldehyde, diluting, and neutralising with alkali.

- 141,720. FATTY ACIDS. Persapol Ges., Hanover, Germany. (Assignees of C. Bennecke, L 1125 Strasse, Mannheim, Germany). International Convention date, May 6, 1914.

Fatty acids containing a number of double linkages or their glycerides are saponified and the neutral soaps heated to 210°-250°C. The product is treated with mineral acid to obtain a fatty acid resembling oleic acid.

- 141,753. POLYMERISING OILS. R. H. Brownlee, 1902, Benedum-Trees Buildings, Pittsburgh, Pa., U.S.A. International Convention date, May 13, 1918.

Light unsaturated hydrocarbons are polymerised by agitating them at 200°-400°F. with a catalyst consisting of anhydrous aluminium chloride or hydrochloric acid or a halide, and a hydrocarbon oil suitable for lubrication is thereby produced. The apparatus is described.

- 141,758. HYDROGEN PEROXIDE. L'Air Liquide, Soc. Anon. pour l'Etude et l'Exploitation des Procédés G. Claude, 48, Rue St. Lazare, Paris. International Convention date, May 11, 1914.

Ammonium persulphate is produced by electrolysis and is isolated by a vacuum or centrifugal filter. It is then heated in a steam-jacketed horizontal tube which is connected to a condenser under vacuum. Hydrogen peroxide collects in the condenser and the ammonium bisulphate residue is dissolved in water and returned to the electrolytic apparatus.

LATEST NOTIFICATIONS.

- 144,605. Borneol, Manufacture of. Fabriques de Produits Chimiques de Thann and de Mulhouse. June 12, 1919.
- 144,631. Syrups, &c., Evaporating and concentrating apparatus for. A. Rambaud. June 10, 1919.
- 144,648-56. Crude anthracene, Process for purification of. Kinzberger & Co. October 10, 1916.
- 144,657-77. Tanning extracts or agents, Manufacture of readily soluble. Badische Anilin & Soda-Fabrik. January 29, 1914.
- 144,658. Dyeing animal fibres, Manufacture and production of yellow colouring matters for. Badische Anilin & Soda-Fabrik. April 14, 1914.
- 144,659. Ammonia, Process for transforming into a salt for use as fertiliser. Badische Anilin & Soda-Fabrik. July 10, 1915.
- 144,663. Preparation of solid substances with properties specially suitable for certain chemical operations. Goldschmidt Akt.-Ges. T. July 25, 1918.
- 144,681. Tetra-substituted ureas, Process of producing. Du Pont de Nemours & Co., E.I. September 11, 1918.
- 144,727. Decolorising liquids containing glycerine or crude glycerine. Elektro-Osmose Akt.-Ges. (Graf. Schwerin Ges.) February 12, 1919.
- 124,760. Gases containing carbonic oxide, Process of and apparatus for treating. General Chemical Co. November 3, 1917.
- 136,834. Ammonia from coke-oven and like gases, Process for recovering. Soc. Industrielle de Produits Chimiques. May 27, 1918.
- 143,973. Sulphate of copper from ores containing copper, Production of. J. S. Ross. March 6, 1919.
- 143,974. Tunnel kilns. G. H. Benjamin. March 6, 1919.
- 144,022. Rock-salt, Process for purifying. L. W. Damman. September 16, 1919.
- 144,023. Salt from brine, Evaporating plant for the manufacture of—and for other purposes. M. Allen. April 9, 1919.
- 144,030. Ammonium sulphate, Manufacture of. S. M. Shadbolt and J. E. Grainger. April 16, 1919.
- 144,051. Retorts for the distillation of carbonaceous materials. J. West, W. Wild and West's Gas Improvement Co. May 7, 1919.
- 144,079. Alcohol, Manufacture of. A. B. C. Rogers and Sir C. H. Bedford. May 27, 1919.
- 144,084. Sulphite and like digesters, Methods of heating. J. K. Ruths and Aktiebolaget. Vaporackumulator. May 29, 1919.
- 144,133. Coagulating latex, Method of. T. Burney. (E. Nixon-Westwood). July 30, 1919.
- 144,142. Pyrites, Kilns for. J. L. Fairrie. August 14, 1919.
- 144,176. Oils or fats, Process for neutralising. A. G. Bloxam. (M. Arbini). October 17, 1919.
- Badische Anilin & Soda-Fabrik. Manufacture of urea. 16,211. June 15. (Germany, August 9, 1916.)
- Badische Anilin & Soda-Fabrik and Johnson, J. Y. Manufacture of intermediate products and colouring matters therefrom, and their application in dyeing and printing. 16,299. June 16.
- Bingham, C. Lids for wooden calcium-carbide drums. 16,011. June 14.
- June 14. Calcium-carbide drums. 16,012. June 14.
- Blom, A. V. Process for manufacture of nitro-phenol-ethyl ethers. 16,187. June 15.
- British Dyestuffs Corporation and Green, A. G. Manufacture of chlorinated derivatives of toluene. 16,179. June 15.
- Chadbourne, F. G. Production of hydro-carbons from oil-bearing minerals. 16,088. June 14.
- Elektro-Osmose Akt.-Ges. (Graf Schwerin Ges.). Process for decolorising liquids containing glycerine or crude glycerine. 16,114. June 14. (Germany, April 1, 1919.)
- Folien & Flitterfabrik Akt.-Ges. Process for obviating high inflammability of celluloid. 16,458. June 17. (Germany, September 13, 1917.)
- Fujimura, Y. Apparatus for hardening fatty oils. 16,090. June 14. (Japan, January 12.)
- Fyleman, M. E. Purification of acetylene. 16,528. June 18.
- Glanzfaeden Akt.-Ges. Process of preparing durable cupric-ammonia cellulose solutions for spinning artificial thread, &c. 16,075. June 14. (Germany, October 12, 1917.)
- Herbert, A. E. Manufacture of chlorinated derivatives of toluene. 16,179. June 15.
- Heisch, G. P. Apparatus for precipitating solids by action of gases on liquids. 16,529. June 18.
- Krause, G. A. Evaporation of solutions and effecting chemical reactions. 16,320. June 16. (Germany, January 29, 1917.)
- Levinson, H., and Martin, G. Process for utilisation of waste lime sludge. 16,534. June 18.
- Lie, E. Process for producing urea from cyanamide. 16,309. June 16.
- Maulaire, L., and Nouvelle, A. Apparatus for production of hydrogen. 16,578. June 18.
- Naef, E. E. Manufacture of nickel and nickel salts. 16,586. June 19.
- " Manufacture of copper. 16,587. June 19.
- Remington, J. S. Production of hydrocarbons from oil-bearing minerals. 16,088. June 14.
- Schmidt, L. Manufacture of protocatechuic aldehyde and protocatechuic acid from piperonal. 16,376. June 17. (Germany, September 15, 1913.)
- Soc. Chimique des Usines du Rhône, anciennement Gilliard, P. Monnet, et Cartier. Dyestuffs of the indigo series. 16,523. June 18. (France, October 14, 1919.)
- Walpole, S. Production of resin from solvent naphtha. 16,280. June 16. (Germany, February 1, 1916.)
- Wohl, A. Manufacture of phthalic anhydride. 16,298. June 16. (Germany, June 28, 1916.)

Specifications Accepted, with Date of Application

- 124,760. Gases containing carbonic oxide, Process of and apparatus for treating. General Chemical Co. November 3, 1917.
- 136,834. Ammonia from coke-oven and like gases, Process for recovering. Soc. Industrielle de Produits Chimiques. May 27, 1918.
- 143,973. Sulphate of copper from ores containing copper, Production of. J. S. Ross. March 6, 1919.
- 143,974. Tunnel kilns. G. H. Benjamin. March 6, 1919.
- 144,022. Rock-salt, Process for purifying. L. W. Damman. September 16, 1919.
- 144,023. Salt from brine, Evaporating plant for the manufacture of—and for other purposes. M. Allen. April 9, 1919.
- 144,030. Ammonium sulphate, Manufacture of. S. M. Shadbolt and J. E. Grainger. April 16, 1919.
- 144,051. Retorts for the distillation of carbonaceous materials. J. West, W. Wild and West's Gas Improvement Co. May 7, 1919.
- 144,079. Alcohol, Manufacture of. A. B. C. Rogers and Sir C. H. Bedford. May 27, 1919.
- 144,084. Sulphite and like digesters, Methods of heating. J. K. Ruths and Aktiebolaget. Vaporackumulator. May 29, 1919.
- 144,133. Coagulating latex, Method of. T. Burney. (E. Nixon-Westwood). July 30, 1919.
- 144,142. Pyrites, Kilns for. J. L. Fairrie. August 14, 1919.
- 144,176. Oils or fats, Process for neutralising. A. G. Bloxam. (M. Arbini). October 17, 1919.

Applications for Patents

- Aktieselskabet Dansk Gaerings-Industri. Process for production of air-yeast, &c. 16,454. June 17. (Denmark, July 5, 1919.)
- Aktieselskabet North Western Cyanamide Co. Process for producing urea from cyanamide. 16,309. June 16.
- Badische Anilin & Soda-Fabrik. Manufacture of fertilisers. 16,084. June 14. (Germany, July 29, 1916.) 16,085. June 14. (Germany, March 26, 1917.)
- " Process for transforming ammonia into a salt for use as fertiliser. 16,086. June 14. (Germany, March 23, 1918.)
- " Manufacture of nitrogen-hydrogen mixtures for synthetic production of ammonia. 16,209. June 15. (Germany, July 2, 1915.)
- " Production of oxides of nitrogen from ammonia by catalytic oxidation. 16,210. June 15. (Germany, April 1, 1916.)

The Longworth Bill

Demand for Its Reintroduction by the U.S. Coal Tar Industry

THE immediate reconsideration of the Longworth Bill and its passage as soon as possible is strongly urged in a memorial to the congress of the United States signed by a large group of manufacturers of coal-tar intermediates, dyes, medicinals, aromatics, and photographic and tanning chemicals who repudiate the suggestion that the bill would create a dyestuffs monopoly. The leading points in the memorial are the following:

A self-contained coal-tar chemical industry is vital, in the event of war, to national safety.

Such an industry will free the American industries that supply textiles, leather, paper, explosives, canned foodstuffs, cosmetics, photography, and moving pictures, and medicines from dependence upon foreign sources for necessary raw materials.

Progress made during the war is arrested, pending the assurance of adequate protection.

A licensing system is essential to small makers of coal-tar chemical products, as no tariff is, under existing conditions, any real protection from unscrupulous foreign competition.

It is just to protect American chemical workers, who are three-times as highly paid as similar European labourers.

The Bill, far from favouring monopoly, is especially to the advantage of the small, independent manufacturer.

Opposition to the Bill has come chiefly from importers of foreign dyes and chemicals who do not represent either American manufacturers or American consumers.

It is unfair and unwise that so vital a Bill should be shelved because of "politics" or personal animosity against a single big dyestuff manufacturer.

Monthly Market Report and Current Prices

Our Market Report and Current Prices are exclusive to THE CHEMICAL AGE, and, being independently prepared with absolute impartiality by Messrs. R. W. Greeff & Co. and Messrs. Chas. Page & Co., Ltd., may be accepted as authoritative. The prices given apply to fair quantities delivered ex wharf or works, except where otherwise stated. The weekly report contains only commodities whose values are at the time of particular interest or of a fluctuating nature. A more complete report and list are published once a month. The current prices are given mainly as a guide to works managers, chemists, and chemical engineers; those interested in close variations in prices should study the market report.

British Market Report

WEDNESDAY, June 23.

Business has been rather quiet during this week, but fluctuations in prices are comparatively few, and values are well maintained.

It is as difficult as ever to obtain delivery from English makers, and the export business remains restricted by the scarcity of supplies.

General Chemicals

ACETONE is passing steadily into consumption and a fair export business is also reported.

ACID ACETIC.—The feature of the week has been a certain realisation of spot supplies by weak holders. Makers' prices are, however, firmly maintained, and the easier tendency is probably only momentary.

ACID CARBOLIC is unchanged in price with very little doing.

ACID CITRIC shows no improvement in demand and second-hand parcels are still on offer.

ACID FORMIC is without change in value and remains in steady demand.

ACID OXALIC.—Only a moderate business is passing owing to the present high prices, but as supplies are very limited the general position is firm.

ACID TARTARIC is still a slow market and is unchanged in value.

AMMONIUM SALTS are in steady demand.

ARSENIC has been in better inquiry, and whilst the price of Cornish make is fully maintained there have been rather low offers of foreign make.

BARIUM SALTS have been in demand for export and second-hand supplies are being cleared off the market as manufacturers are still sold for some months ahead.

BLEACHING POWDER is still required for export account, and high prices are offered for such parcels as are available for near delivery.

COPPER SULPHATE remains a weak market and sellers are inclined to offer concessions in prices.

FORMALDEHYDE is very scarce for prompt delivery and the price is fully maintained. There are a few parcels offering to arrive at slightly lower figures, but generally speaking there is little change.

LEAD SALTS are inactive.

LITHOPONE has been in quiet demand without change in price.

POTASSIUM PERMANGANATE is a firm market and supplies for early delivery are difficult to obtain.

POTASSIUM PRUSSATE is very scarce on this market and prompt supplies command a premium. Comparatively little foreign make is arriving.

SODA CAUSTIC is decidedly firmer in tone and remains in good demand on export account.

SODIUM NITRITE.—The market is lifeless and the price is nominally unchanged.

SODA PHOSPHATE is firmer and scarce for early delivery.

TIN SALTS are unchanged with little doing.

ZINC SALTS.—A quiet business has been passing at recent figures.

Coal Tar Intermediates

There is no change to report, and the demand far exceeds the supply.

Export licences are only granted very sparingly, but there is such a large demand for home trade that the market is not influenced, and prices have, if anything, an upward tendency.

ALPHA NAPHTHOL is in good request and manufacturers are fully sold for the next few months.

ALPHANAPHTHYLAMINE is in good request at recent prices.

ANILINE OIL AND SALT are in better demand, especially for export.

BETA NAPHTHOL is very active and manufacturers cannot cope with the demand. Spot parcels are eagerly bought at high prices.

DIMETHYLANILINE is in request, but practically unobtainable.

PARANITRANILINE is a shade firmer, and large inquiries are being received for export.

XYLIDINE is quiet, but the previous price is maintained.

Coal Tar Products

There is very little change in our market since last week.

90'S BENZOL is still worth about 2s. 11d. on rails.

PURE BENZOL is scarce at about 3s. 4d. per gallon.

CREOSOTE OIL remains steady at 1s. to 1s. 1d. in the North, and 1s. 1d. to 1s. 2d. in the South.

SOLVENT NAPHTHA is slightly firmer at a price of about 3s. on rails.

HEAVY NAPHTHA is in good demand at 3s. 6d. per gallon.

NAPHTHALENE.—Supplies of naphthalene, particularly the crude qualities, are rather freer. Crude is worth about £14 to £18 per ton, and Refined from £40 to £45.

PITCH.—The demand from abroad is somewhat better, but Continental buyers are not yet prepared to pay the price demanded by manufacturers in this country. Some business has been done for delivery during next season at 170s. f.o.b. East Coast ports.

Sulphate of Ammonia

The position remains unchanged.

Current Prices

Chemicals

	per	£	s	d.		£	s	d.
Acetic anhydride	lb.	0	3	6	to	0	3	9
Acetone oil	ton	90	0	0	to	95	0	0
Acetone, pure	ton	120	0	0	to	125	0	0
Acid, Acetic, glacial, 99-100%	ton	110	0	0	to	115	0	0
Acetic, 80% pure	ton	95	0	0	to	96	0	0
Arsenic	ton	100	0	0	to	105	0	0
Boric, cryst.	ton	74	10	0	to	76	0	0
Carbolic, cryst. 39-40%	lb.	0	1	3	to	0	1	3½
Citric	lb.	0	5	6	to	0	5	9
Formic, 80%	ton	115	0	0	to	120	0	0
Gallic, pure	lb.	8	6	0	to	8	8	9
Hydrofluoric	lb.	0	0	7	to	0	0	8
Lactic, 50 vol.	ton	62	0	0	to	63	0	0
Lactic, 60 vol.	ton	75	0	0	to	77	10	0
Nitric, 80 Tw.	ton	41	0	0	to	44	0	0
Oxalic	lb.	0	2	11	to	0	3	0
Phosphoric, 1.5	ton	65	0	0	to	67	0	0
Pyrogallic, cryst	lb.	0	11	6	to	0	11	9
Salicylic, Technical	lb.	0	2	10	to	0	3	0
Salicylic, B.P.	lb.	0	3	8	to	0	3	10
Sulphuric, 92-93%	ton	8	0	0	to	8	10	0
Tannic, commercial	lb.	0	5	0	to	0	5	3
Tartaric	lb.	0	4	0	to	0	4	2
Alum, lump	ton	19	10	0	to	20	0	0
Alum, chrome	ton	93	0	0	to	95	0	0
Alumino ferric	ton	9	0	0	to	9	10	0
Aluminium, sulphate, 14-15%	ton	17	10	0	to	18	10	0
Aluminium, sulphate, 17-18%	ton	20	10	0	to	21	10	0
Ammonia, anhydrous	lb.	0	2	2	to	0	2	4
Ammonia, 880	ton	52	0	0	to	57	0	0
Ammonia, 920	ton	42	0	0	to	46	0	0
Ammonia, carbonate	lb.	0	0	7½	to	—	—	—
Ammonia, chloride	ton	115	0	0	to	120	0	0
Ammonia, muriate (galvanisers) ...	ton	60	0	0	to	65	0	0
Ammonia, nitrate	ton	60	0	0	to	65	0	0
Ammonia, phosphate	ton	130	0	0	to	135	0	0
Ammonia, sulphocyanide	lb.	0	2	3	to	0	2	6
Amyl, acetate	ton	410	0	0	to	420	0	0
Arsenic, white, powdered	ton	67	10	0	to	70	0	0
Barium, carbonate	ton	13	10	0	to	14	10	0
Carbonate, 92-94%	ton	14	10	0	to	15	0	0

	per	£	s.	d.	£	s.	d.	
Barium, chlorate	lb.	0	1	0	to	0	1	1
Chloride.....	ton	34	0	0	to	36	0	0
Barium, Nitrate.....	ton	55	0	0	to	56	0	0
Sulphate, blanc fixe, dry.....	ton	25	10	0	to	26	0	0
Sulphate, blanc fixe, pulp.....	ton	15	10	0	to	16	0	0
Bleaching powder, 35-37%	ton	18	0	0	to	—	—	—
Borax crystals	ton	41	0	0	to	42	10	0
Calcium acetate, Brown.....	ton	20	0	0	to	21	0	0
Grey.....	ton	35	0	0	to	37	10	0
Calcium Carbide	ton	30	0	0	to	32	0	0
Chloride.....	ton	9	10	0	to	10	10	0
Carbon bisulphide.....	ton	58	0	0	to	59	0	0
Casein, technical	ton	80	0	0	to	83	0	0
Cerium oxalate.....	lb.	0	3	9	to	0	4	0
Chromium acetate	lb.	0	1	2	to	0	1	3
Cobalt acetate	lb.	0	8	0	to	0	8	3
Oxide, black	lb.	0	10	0	to	0	10	3
Copper chloride	lb.	0	1	3	to	0	1	6
Sulphate	ton	45	0	0	to	46	0	0
Cream Tartar, 98-100%	ton	295	0	0	to	300	0	0
Epsom salts (see Magnesium sulphate)								
Formaldehyde 40% vol.....	ton	345	0	0	to	350	0	0
Formosol (Rongalite)	lb.	0	4	0	to	0	4	3
Glauber salts	ton	Nominal.						
Glycerine, crude.....	ton	70	0	0	to	72	10	0
Hydrogen peroxide, 12 vols.	gal.	0	2	8	to	0	2	9
Iron perchloride	ton	50	0	0	to	52	0	0
Iron sulphate (Copperas)	ton	4	15	0	to	5	0	0
Lead acetate, white	ton	90	0	0	to	92	10	0
Carbonate (White Lead).....	ton	70	0	0	to	72	10	0
Nitrate.....	ton	72	0	0	to	75	0	0
Litharge	ton	62	10	0	to	65	0	0
Lithopone, 30%	ton	58	0	0	to	60	0	0
Magnesium chloride	ton	15	10	0	to	16	10	0
Carbonate, light.....	cwt	2	15	0	to	3	0	0
Sulphate (Epsom salts commercial)	ton	14	0	0	to	14	10	0
Sulphate (Druggists')	ton	18	10	0	to	19	10	0
Manganese, Borate.....	ton	190	0	0	to	—	—	—
Sulphate	ton	105	0	0	to	110	0	0
Methyl acetone.....	ton	95	0	0	to	100	0	0
Alcohol, 1% acetone	gall.	Nominal.						
Nickel ammonium sulphate, single salt	ton	50	0	0	to	52	10	0
Potassium bichromate	lb.	0	2	2	to	0	2	3
Potassium Carbonate, 90%	ton	115	0	0	to	120	0	0
Chloride.....	ton	Nominal.						
Chlorate	lb.	0	0	10	to	0	0	10½
Meta-bisulphite, 50-52%	ton	270	0	0	to	280	0	0
Nitrate, refined	ton	70	0	0	to	72	0	0
Permanganate	lb.	0	5	9	to	0	6	0
Prussiate, red	lb.	0	5	3	to	0	5	6
Prussiate, yellow	lb.	0	2	3	to	0	2	4
Sulphate, 90%	ton	31	0	0	to	33	0	0
Salammoniac, firsts	cwt.	5	15	0	to	—	—	—
Seconds	cwt.	6	0	0	to	—	—	—
Sodium acetate	ton	61	0	0	to	63	0	0
Arsenate, 45%	ton	60	0	0	to	62	0	0
Bicarbonate	ton	10	10	0	to	11	0	0
Bichromate	lb.	0	1	11	to	0	2	0
Bisulphite, 60-62%	ton	50	0	0	to	52	10	0
Chlorate	lb.	0	0	5½	to	0	0	6½
Caustic, 70%	ton	45	0	0	to	—	—	—
Caustic, 76%	ton	46	0	0	to	—	—	—
Hydrosulphite, powder, 85%	lb.	0	4	0	to	0	5	0
Hyposulphite, commercial.....	ton	37	10	0	to	40	0	0
Nitrite, 96-98%	ton	100	0	0	to	105	0	0
Phosphate, crystal	ton	40	0	0	to	42	0	0
Perborate.....	lb.	0	2	2	to	0	2	4
Prussiate	lb.	0	1	8	to	0	1	8½
Sulphide, crystals	ton	30	0	0	to	32	0	0
Sulphide, solid, 60-62%	ton	62	10	0	to	65	0	0
Sulphite, cryst.	ton	15	10	0	to	16	10	0
Strontium carbonate	ton	85	0	0	to	90	0	0
Nitrate.....	ton	90	0	0	to	95	0	0
Sulphate, white	ton	8	10	0	to	10	0	0
Sulphur chloride.....	ton	42	0	0	to	44	10	0
Sulphur, Flowers	ton	24	0	0	to	26	0	0
Roll	ton	24	0	0	to	26	0	0
Tartar emetic	lb.	0	3	4	to	0	3	5
Tin perchloride, 33%	lb.	0	2	6	to	0	2	7
Perchloride, solid	lb.	0	3	0	to	0	3	3
Protochloride (tin crystals)....	lb.	0	2	0	to	0	2	1
Zinc chloride, 102 Tw.	ton	22	0	0	to	23	10	0
Chloride, solid, 96-98%	ton	60	0	0	to	65	0	0
Oxide, 99%	ton	82	10	0	to	85	0	0
Oxide, 94-95%	ton	70	0	0	to	72	10	0
Dust, 90%	ton	90	0	0	to	92	10	0
Sulphate	ton	21	10	0	to	23	10	0

Coal Tar Intermediates, &c.

	per	£	s.	d.		£	s.	d.
Alphanaphthol, crude	lb.	0	4	0	to	0	4	3
Alphanaphthol, refined	lb.	0	5	0	to	0	5	3
Alphanaphthylamine.....	lb.	0	4	0	to	0	4	3
Aniline oil, drums extra	lb.	0	1	8	to	0	1	9
Aniline salts	lb.	0	1	10	to	0	2	0
Anthracene, 85-90%	lb.	-	-	-	to	-	-	-
Benzaldehyde (free of chlorine).....	lb.	0	5	6	to	0	6	0
Benzidine, base	lb.	0	12	6	to	0	13	6
Benzidine, sulphate	lb.	0	10	0	to	0	11	0
Benzoic acid	lb.	0	5	6	to	0	6	0
Benzoate of soda	lb.	0	5	6	to	0	6	0
Benzyl chloride, technical	lb.	0	2	0	to	0	2	3
Betanaphthol benzoate.....	lb.	1	6	0	to	1	7	6
Betanaphthol	lb.	0	5	3	to	0	5	6
Betanaphthylamine, technical.....	lb.	0	8	6	to	0	9	6
Croceine Acid, 100% basis	lb.	0	5	0	to	0	6	3
Dichlorobenzol	lb.	0	0	6	to	0	0	7
Diethylaniline.....	lb.	0	7	9	to	0	8	6
Dinitrobenzol	lb.	0	1	5	to	0	1	6
Dinitrochlorobenzol	lb.	0	1	5	to	0	1	6
Dinitronaphthalene	lb.	0	1	4	to	0	1	6
Dinitrotoluenol	lb.	0	1	8	to	0	1	9
Dinitrophenol.....	lb.	0	2	3	to	0	2	6
Dimethylaniline	lb.	0	5	0	to	0	5	6
Diphenylamine	lb.	0	5	0	to	0	5	3
H-Acid	lb.	0	14	6	to	0	15	0
Metaphenylenediamine	lb.	0	5	9	to	0	6	0
Monochlorobenzol	lb.	0	0	10	to	0	1	0
Metanilic Acid	lb.	0	7	6	to	0	8	6
Monosulphonic Acid (2:7)	lb.	0	7	6	to	0	8	0
Naphthionic acid, crude	lb.	0	5	6	to	0	6	0
Naphthionate of Soda.....	lb.	0	6	0	to	0	6	6
Naphthylamin-di-sulphonic-acid....	lb.	0	5	6	to	0	6	6
Nitronaphthalene	lb.	0	1	3	to	0	1	4
Nitrotoluenol	lb.	0	1	4	to	0	1	6
Orthoamidophenol, base.....	lb.	0	18	0	to	1	0	0
Orthodichlorobenzol	lb.	0	1	2	to	0	1	4
Orthotoluidine	lb.	0	2	6	to	0	2	9
Orthonitrotoluenol	lb.	0	1	7	to	0	1	8
Para-amidophenol, base	lb.	0	15	0	to	0	16	0
Para-amidophenol, hydrochlor	lb.	0	15	6	to	0	16	6
Paradichlorobenzol	lb.	0	0	6	to	0	0	8
Paranitraniline	lb.	0	8	3	to	0	8	9
Paranitrophenol	lb.	0	2	6	to	0	2	9
Paranitrotoluenol	lb.	0	5	3	to	0	5	6
Paraphenylenediamine, distilled ..	lb.	0	13	6	to	0	14	6
Paratoluidine	lb.	0	7	6	to	0	8	6
Phthalic anhydride	lb.	0	5	6	to	0	6	0
R. Salt, 100% basis	lb.	0	4	0	to	0	4	2
Resorcin, technical	lb.	0	11	6	to	0	12	6
Resorcin, pure	lb.	0	17	6	to	1	0	0
Salol	lb.	0	5	9	to	0	6	0
Shaeffer acid, 100% basis.....	lb.	0	3	6	to	0	3	0
Sulphanilic acid, crude	lb.	0	1	5	to	0	1	6
Tolidine, base	lb.	0	10	6	to	0	11	6
Tolidine, mixture	lb.	0	3	0	to	0	3	6

Cardiff By-products Market

The by-products market remains steady, the latest quotations being as follows:—

Sulphate of Ammonia—

For home consumption (per ton)	£23 10s.
For export (per ton f.o.b.)	£30 to £40
Benzol, 90's (per gallon)	3s. 3d.
Ditto, 50's (per gallon)	3s. 0d. to 3s. 3d.
Solvent Naphtha (per gallon)	3s. 3d. to 3s. 9d.
Heavy Naphtha (per gallon)	3s. 3d. to 3s. 6d.
Creosote (per gallon)	1s. 2d. to 1s. 3d.
Pitch (per ton)	150s. to 160s.
Crude Naphthalene Salts (per ton)	£10 to £25
Motor Benzol (per gallon)	2s. 0d. to 3s. 3d.
Crude Benzol (per gallon)	2s. 0d.
Tuluol (per gallon)	4s.

Finding that they can purchase spelter cheaper than they could produce it if the demands of their employees, who are on strike for increased wages, were granted, the directors of the SWANSEA VALE SPELTER WORKS have decided to close down the works, notwithstanding the men's eleventh hour offer to withdraw their claims. The works gave employment to 400 men.

Company News

YORKSHIRE DYEWARE & CHEMICAL.—At the annual meeting in Leeds last week a dividend of 15 per cent. was declared.

BRITISH PHOTOGRAPHIC INDUSTRIES.—The subscription list was closed on Friday of last week, the issue having been fully subscribed.

AMERICAN CYANAMID.—A quarterly dividend has been declared of $1\frac{1}{2}$ per cent. on preferred stock, payable in New York on July 1.

ANGLO-AMERICAN OIL CO.—A balance dividend has been declared of 3s. per share, making 30 per cent., tax free, for the year 1919, or the same as for 1918.

SALAR DEL CARMEN NITRATE SYNDICATE.—The directors recommend a dividend of 10 per cent., less tax, being 5 per cent., in respect of the year ending 1918, and 5 per cent. interim on account of the profits for 1920.

JOHN LYSAGHT.—The profit for 1919 amounted to £731,466. A final dividend is declared of 10 per cent., and £395,286 is carried forward, subject to excess profits duty.

LOBITOS OILFIELDS.—A balance dividend has been declared of 15 per cent., less tax, making 20 per cent. for the year 1919 (against 15 per cent. for 1918); £50,000 to reserve and £37,811 forward, subject to excess profits duty (if any).

WELSBACH LIGHT.—The net profit for the year to March 31 last amounted to £61,688, and the directors recommend on the old shares a dividend of 10 per cent. and a bonus of 5 per cent., both less tax.

NATAL AMMONIUM.—The accounts for the year to September 30 last show a profit of £1,693; after deducting this profit from the loss brought forward, a debit balance of £2,591 remains to be carried forward.

ASBESTOS CORPORATION OF CANADA.—Dividends have been declared of $1\frac{1}{2}$ per cent. on the preferred shares and $1\frac{1}{2}$ per cent. on the common shares for the quarter ending June 30, payable on July 15. A year ago the dividends were $1\frac{1}{2}$ per cent. and $1\frac{1}{2}$ per cent. respectively.

NARAGUTA EXTENDED (NIGERIA) TIN MINES.—The net profit for the year 1919 amounted to £15,318. The directors recommend a dividend for the year of 10 per cent. less tax (against $12\frac{1}{2}$ per cent. for the previous year). £23,582 is carried forward subject to claims for income tax and Excess Profits Duty.

EBBW VALE STEEL, IRON & COAL.—At the fifty-third general meeting and the fifty-first and fifty-second adjourned general meetings held in London last week Sir P. G. Henriques and Mr. L. F. Benyon were elected directors, and a resolution was passed authorising the directors to appropriate £2,000 to charitable purposes during the current year.

SAN SEBASTIAN NITRATE.—The report for 1919 states that the oficina was closed early in January, and remained closed during the remainder of the year. Expenditure in Chile amounted to £18,010, and the loss for the year was £30,980, from which is deducted the credit balance of £5,329 brought in, leaving £25,651. For 1918 the net profit was £7,726.

ANGLO-EGYPTIAN OILFIELDS.—The net profit for the year 1919 amounted to £411,480. It is recommended that £354,571 be applied to the payment of dividends on the respective classes of shares, carrying forward £119,960. The proportion of the profits to B shares allows for a dividend equal to 20 per cent. upon the B share capital, against 25 per cent. for the previous year.

BLEACHER'S ASSOCIATION.—Sir Alan Sykes, M.P., who presided at the annual meeting in Manchester on Tuesday, stated that the past year's profits amounted to £1,202,240, which was £472,628 above the previous year's figures, and £571,613 more than in the pre-war year 1913-14. The directors recommended that 15 per cent. on the ordinary shares be paid, and a bonus of 5 per cent. in addition, as compared with 10 per cent. in the previous year, leaving £321,461 to carry forward.

BROWNLEE & CO.—The report for the year to March 31 last states that, after provision for excess profits duty, income-tax and depreciation there remains a profit of £63,524, and £13,652 was brought in, making £77,176. After providing for debenture interest and preference dividend, the directors transfer to workmen's compensation fund £5,250, to reserve fund £20,000, and recommend a dividend of 10 per cent. on the ordinary shares, free of tax, payable June 30, carrying forward £15,627.

ROYAL DUTCH CO.—The offer of shares of the Royal Dutch Co. for the working of petroleum wells in Netherlands India is

announced by N. M. Rothschild & Sons on behalf of the company. Shareholders have the opportunity to subscribe to 106,909,000 florins of shares entitled to the full dividend for the financial year 1920 and subsequent years, and divided into shares of 1,000 fl. each and sub-shares of 100 fl. each. Subscriptions will be received in London by Messrs. Rothschild at New Court, St. Swithin's Lane, E.C. 4, up to June 28, inclusive.

ANTOFAGASTA (CHILE) & BOLIVIA RAILWAY.—The gross receipts for the past year—£1,226,891—show a decrease of £941,228, compared with 1918 or 43.41 per cent., which is principally accounted for by the crisis in the nitrate industry during that period, the tonnages carried to the company's ports being 230,217 tons, compared with 1,076,947 tons for 1918. It was not until the autumn of 1919 that any revival took place in the nitrate industry. Large sales were made for shipment from December onwards, and many oficinas which had closed down have since re-opened.

ALUMINIUM CORPORATION.—The balance at the credit of profit and loss account, after deducting debenture interest and preference dividends to December 1918, amounts to £60,623, out of which the directors recommend a dividend for the year 1919 of 7 per cent., less income tax, upon the preference stock and shares. They further recommend that £30,000 be placed to reserve against imperial taxation and special depreciation, and that the balance of £18,978 be carried forward. The corporation was de-controlled by an order of the Ministry of Munitions dated November 5, 1919.

CYPRUS OIL TRUST.—At the adjourned general meeting held on Monday, Mr. T. Brémner, who presided in the unavoidable absence of Mr. de Courcy Montfort, stated that the board had entered into an agreement with the Spies Petroleum Co., and under the contract they had the option of acquiring the three Rumanian properties on certain defined terms. The Spies Co. would send out their engineer to inspect the properties, and if the report were satisfactory the Spies Co. had the right within an agreed period to form a large company with a substantial capital and with sufficient working capital. The interest accruing to the Cyprus Oil Trust would, if the option were exercised, be £90,000 in fully-paid £1 shares.

FORSTER'S GLASS.—The first annual meeting of Forster's Glass Co., Ltd., was held at St. Helens on Saturday, June 19, Mr. J. Forster presiding. The chairman, in moving the adoption of the report and accounts, congratulated the staff and employees on the satisfactory result obtained during the first year as a public company. The company's works were, he stated, the most up-to-date and efficient in the country, and its output of bottles and jars far exceeded the output of any other individual works making the same class of goods in Great Britain. A dividend of $7\frac{1}{2}$ per cent. on the preference shares and $7\frac{1}{2}$ per cent. on the ordinary shares was declared, in both cases less income-tax, at the rate of 6s. in the £.

NEW TRANSVAAL CHEMICAL.—Baron E. B. d'Erlanger (chairman), who presided on Friday, June 18, at the twenty-fourth general meeting in London, referred to the great loss the company had sustained in the death of Dr. Schlesinger-Delmore to whom, he stated, the uninterrupted prosperity of the company was entirely due. Mr. Caesar Schlesinger and Mr. Franz Deutch, both of whom had always been in contact with Dr. Schlesinger-Delmore, both from the business and the technical point of view, had, however, gained the confidence of those most directly interested in the concern—namely, Lever Brothers—and in them and in the numerous technical staff which Lever Brothers had at their disposal they had a combination which ensured the future prosperity of the company.

SAND, GLASS & FOUNDRY MATERIALS (AMALGAMATED), LTD.—This company has been formed to acquire and develop under one control and management the following firms: High Silica Sand Co., Huttons Ambo, Yorks; T. H. Lyon & Partner, South Cave, Hull; Doncaster Sand & Gravel Co.; Barnby Dun Sand & Gravel Co., near Doncaster; F. G. Foster & Son, Ltd., Heck & Hensall, Selby; Lockwood, Blagden & Crawshaw, Ltd., Warnsworth and Kiveton Park, Sheffield; Yorkshire Refractories Co., Ltd., Bawtry; and Walker & Crawshaw, Ltd., Conisboro'. The capital of the company is £300,000, divided into 300,000 ordinary shares of £1 each, of which 200,000 are now offered for public subscription at par. The remaining 100,000 shares will be allotted as fully paid to the vendor in part payment of the purchase price. No part of the issue has been or will be underwritten, and the subscription list will close on or before June 30.

WILLIAM CORY & CO.—Sir A. C. Cory-Wright (chairman), who presided at the 24th general meeting in London on Tuesday, stated that the company had entered into an agreement by which they became the exclusive selling agents of one of the most important oil producing groups, and in that connection a company—the British Oil Bunkering Co., Ltd.—had been formed, and the shareholding of that company was taken up partly by the oil interests, representing the producers, and partly by the steamship lines and the Cory Company, as representing the consumers. Lord Inchcape was chairman of the Oil Bunkering Company, and the Cory Company was represented on the board. Under that agreement the whole organisation of the Cory Company and all its associated companies in the United Kingdom and throughout the world would be placed at the disposal of the British Oil Bunkering Co., and in that way the company would be in a position to undertake the supplies of both coal and oil to all essential ports.

WEBB'S CRYSTAL GLASS.—Sir Francis Towle, presiding at the statutory meeting of Webb's Crystal Glass Co., Ltd. (one of the component companies of British Glass Industries, Ltd.), on Tuesday, said that some of their branches were intensely interested in the Key Industries Bill—for example, Duroglass, their chemical branch. The dye industry had received the necessary security, but it was dependent on the highest quality of laboratory glassware, which they were manufacturing. The Germans were making supreme efforts to regain this branch of the glass industry in order that they might control the protected dye industry, and he hoped, in the interests of the country, that this important point would not be forgotten by our legislators. The directors had decided to make an interim payment of the fixed dividend on the preference shares in respect of the first period of six months' working, and they hoped to be able to make some further interim distribution of profits during the current financial year.

BURMAH OIL.—After writing off £498,856 for depreciation, charging income tax (£318,120), contribution to employees' provident fund (£78,000), a donation of £50,000 to Cambridge University, and all expenses, the profit for the year is £4,155,937. Adding the balance from 1918—£210,475—the disposable balance is £4,366,413. From this sum £1,358,669 is appropriated to various reserves, leaving a balance of £3,007,744. The ordinary dividend is raised to 50 per cent., free of tax, against 30 per cent., free of tax, for 1918, and there remains to be carried forward, subject to excess profits duty, estimated at £1,300,000, £1,536,994. The increased profits are largely attributable to the advance in the value of the rupee, especially during the latter part of the year, but materially contributing factors have been reduced fuel consumption and greater yields of the more valuable products of crude petroleum as the result of improvements at the refineries. The directors recommend the capitalisation of £2,286,000 of the reserve and the issue to the ordinary shareholders on the register at July 8 by way of bonus of 2,286,000 fully paid shares, giving four new for every five existing shares.

BRITISH BROKEN HILL PROPRIETARY.—After referring, at the fortieth annual meeting in London recently, to the loss the company had sustained through the death of the late chairman, Mr. J. S. Smith-Winby, Mr. W. H. Woodhead (chairman), who presided, spoke of the prolonged strike of the miners, which had stopped all productive work, but pointed out that from its inception any compromise that might have been possible between the mining companies and their employees could not have resulted in the re-opening of the mines until quite recently, owing to conditions entirely beyond the control of either party to the dispute, namely, the shortage of coal supplies. With regard to the near future, the statistical position of lead appeared to be a very strong one, and those in the best position to judge considered that supplies in sight were too small to be regarded as safe by manufacturers. In zinc, the chairman stated, their interests were in the hands of the Zinc Producers' Association, who had sold all their output, by far the greater part to the British Government; but all the stocks not taken by the latter had been sold recently to Belgium. The strike had, of course, materially affected this portion of the company's business also, and for over 12 months they had had no current production for disposal under their sales contracts.

ELECTRO BLEACH & BY-PRODUCTS.—The profit for the year to Dec. 31, 1919, after deducting repairs, standing charges, depreciation, bonus to employees, directors' additional remuneration and excess profits duty, amounts to £34,637 8s. 1d., to which must be added £394 1s. 2d. brought forward from 1918, making a total of £35,031 9s. 3d. After charging debenture interest and the interim dividends of 3½ per cent. on the preference shares paid on September 1, 1919, and of 6½ per cent. on the ordinary shares paid on December 1, 1919, there is an available balance of £24,027 7s. 10d. Of this sum £14,750 was required to pay the further interim dividends (on account of 1919) of 3½ per cent. on the preference shares, making 7 per cent. for the year, and 7½ per cent. on the ordinary shares, making 14 per cent. for the year, leaving the sum of £9,277 7s. 10d. The directors recommend that £5,000 be placed to the reserve account, making a total of £24,234 5s. in that account, and that £4,277 7s. 10d. be carried forward. Mr. James Swinburne retires by rotation, and, being eligible, is recommended for re-election as a director. The directors further recommend that Mr. A. T. Smith be elected a director. The auditors, Fred. Scott & Co., retire, and, being eligible, offer themselves for re-election.

PREMIER OIL CO.—At an extraordinary general meeting of the Premier Oil Co., Ltd., held in London last week, a resolution was passed approving and adopting a provisional agreement dated May 28, 1920, made with the Société Financière de Péroles. Mr. F. Walker (chairman), who presided, stated that by the agreement their company would obtain in the first place £250,000 in English money, which, with the money it had in hand, would give a total balance of cash of about £350,000. They would receive preference shares to the nominal value of 45,000,000 fr., which taken at par and on the basis of 50 fr. to the £, represented £900,000; they would also receive 20,000 of the 50,000 founders' shares. They could not, of course, say what these founders' shares would eventually be worth, but they were receiving a substantial sum of money for an option to buy part of these shares at 1,000 fr. per share, so they considered it reasonable to reckon them at that price. On that basis they were worth 20,000,000 fr., or £400,000, which made a grand total of £1,650,000, or approximately 8s. per share of Premier Oil. Of the 125,000,000 fr. nominal capital they would receive 45,000,000 fr., and their French friends were guaranteeing the subscription at par in cash of the whole of the remaining 80,000,000 fr. The Société Financière de Péroles included representatives of banking and industrial groups in France of high standing. It had a paid up capital of 25,000,000 fr., and even in these depressed times that capital stood at a premium of nearly 200 per cent. on the Paris market.

German Potash Industry: 10% Dividend

ACCORDING to a statement by the U.S. Commercial Attaché at The Hague, during 1919 the German potash industry raised prices three times, on April 1, August 1 and December 3. These increases were a consequence of the enormous rise in wages and cost of materials. The satisfactory profits realised were chiefly attributable to the foreign deliveries, which began in the second half-year, especially of chlorate and sulphate of potash, and to the fact that the works were able to keep up their activities through having their own coal supply. Comparatively few works were in this position, so that although some potash works showed satisfactory results, others did not. The net profit for the year 1919 was 17,661,511 marks, as against 2,317,667 marks for 1918. This result enables the regular pre-war dividend of 10 per cent. to be again paid, as against 7 per cent. in 1918. It was also proposed to pay a bonus of 200 marks per share, as against nothing in 1918.

Chemical Imports Co.

THE CHEMICALS IMPORT CO., LTD., OF SWISS INDUSTRIALS, has been registered under the Companies (Consolidation) Act, 1908. The company is also known as the "Chemie-Import A.-G. Schweiz Industrieller" in Zurich, the "S. A. Industriels Suisses pour l'importation de produits chimiques," and the "Soc. an. d'Industriali Svizzeri per l'importazione di prodotti chimici." It was incorporated in Zurich, the "statutes" being adopted on November 29, 1918. The original stock was 2,000,000, in 4,000 shares of 500f. each. Only persons and firms domiciled in Switzerland, registered in the "Commercial Register," and connected with the industry can become shareholders. The British address is 133-139, Finsbury Pavement, E.C., where Hans Steiner, manager, is authorised to accept service of process and notices.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

London Gazette

Partnership Dissolved

ALLEN, ROBERT HOWARD, & WILCOCKS, EDMUND, manufacturing chemists, 122-124, Wells Road, Sydenham, S.E., under the style of Robert Howard Allen & Co., by mutual consent as and from June 21, 1920. All debts received and paid by Robert Howard Allen.

Companies Winding Up Voluntarily

KENT PORTLAND CEMENT WORKS, LTD. (In voluntary liquidation).—A general meeting of members will be held in 36, Camomile-street, London, E.C. 3, on Friday, July 23, 1920, at 11 a.m. C. A. Radermacher, Liquidator.

KANSAS OIL SYNDICATE, LTD. (In voluntary liquidation).—A meeting of creditors will be held in Room 25, 10, Norfolk Street, Strand, London, on Thursday, July 1, at 10 a.m. A. Goodwin, Liquidator.

REGULUS METAL & PLUMBING CO., LTD. (In voluntary liquidation).—A general meeting of members will be held at the office of the Liquidator, 8, Staple Inn, Holborn, London, on Monday, July 26, at 12.30 p.m. A. E. Tilley, Liquidator.

EASTERN COUNTIES DRUG COMPANY, LTD.—Liquidator, Mr. H. Hawes.

CHILWORTH GUNPOWDER CO., LTD. (In voluntary liquidation).—A meeting of creditors will be held at Bond Court House, Walbrook, E.C. 4, on Wednesday, July 7, at 11 a.m. W. McLintock, Liquidator.

EMPIRE PORTLAND CEMENT CO., LTD. (In voluntary liquidation).—A general meeting of members will be held at 36, Camomile Street, London, E.C. 3, on Friday, July 23, at 12.45 p.m. C. A. Radermacher, Liquidator.

Notice of Dividend

NEW ZEALAND OILFIELDS, LTD., 14-16, Cockspur Street, London, W. 1, first and final, or otherwise—first and final. Any day (except Saturday) between 11 and 2 at the office of the Official Receiver and Liquidator, 33, Carey Street, Lincoln's Inn, London, W.C.

Notice of Intended Dividend

EDGE, JOHN, 18, Spring Gardens, Pendleton, Lancs., trading under the style of John Edge & Co., at Maple Street, Pendleton, drysalter. July 7. Trustee, A. Watson, 109-117, Corn Exchange Buildings, Manchester.

Liquidators' Notices

LIQUID PURIFICATION COMPANY, LTD.—A meeting of creditors will be held at 15, Cophall Avenue, London, E.C. 2, on Wednesday, July 7, at 12 noon. Creditors' claims on or before July 31 to C. G. Baron, 15, Cophall Avenue, London, E.C. 2, Liquidator.

ANTHRADUFF SMOKELESS FUEL CO., LTD.—A general meeting of members will be held at 51, North John Street, Liverpool, on July 26, at 12 noon. W. L. Jackson, Liquidator.

Mortgages and Charges

[NOTE.—The Companies Consolidation Act, of 1908, provides that every Mortgage or Charge, as described therein, created after July 1, 1908, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges which would, if created after July 1, 1908, require registration. The following Mortgages and Charges have been so registered. In each case the total debt, as specified, in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced since such date.]

HERTS BENZOL CO., LTD., Hemel Hempstead.—Registered June 12, £1,000 debenture, to H. M. Roxby, 4, Parrington Road, Berkhamsted; general charge. *£960. February 24, 1920.

RAINBOW CLAY CO., LTD., Newton Abbot.—Registered June 9, £4,000 debentures; general charge. *Nil. March 26, 1920.

NORTHERN NIGERIA (BAUCHI) TIN MINES, LTD., London, E.C.—Registered June 2, £22,500 debenture, to British Trade Corporation, 13, Austin Friars, E.C.; charged on leasehold hereditaments in Northern Nigeria, also general charge. *Nil. December 20, 1919.

PILKINGTON BROTHERS, LTD., St. Helens.—Registered June 8, Trust Deed dated May 26, 1920, securing £600,000 B mortgage debenture stock; general charge, subject to Trust Deed of July 9, 1894. *£600,000. March 12, 1920.

TAYLOR'S DRUG CO., LTD., Leeds.—Registered June 12, £800 mortgage, to Mrs. E. Speight, 101, Harrogate Road, Leeds, widow and another; charged on 79, Main Street, Bingley. *£60,985 13s. 5½d. January 12, 1920.

TRESKILLING CHINA CLAY CO., LTD., London, W.C.—Registered May 31, £14,000 debentures; general charge. *£10,000. December 31, 1919.

Satisfactions

BRITISH CELLULOSE & CHEMICAL MANUFACTURING CO., LTD., London, S.W.—Satisfaction registered June 11, £1,950,000, registered February 12, 1919.

OCEAN OIL CO., LTD. (formerly EXPRESS OIL CO., LTD.), London, E.C.—Satisfactions registered June 8, £1,600, registered November 26, 1911, and £100, registered December 13, 1911.

New Companies Registered

The following have been prepared for us by Jordan & Sons, Ltd., company registration agents, 116 and 117, Chancery Lane, London, W.C. :—

HAMOES, LTD., 67, Welbeck Street, W.—Manufacturing, wholesale and retail druggists. Nominal capital, £3,000 in 600 shares of £5 each. Directors: C. Cherly, 49, Vimmelskafet, Copenhagen, Denmark (governing director). Qualification of directors to be voted by the governing director.

ISAAC SPENCER & CO., FLEETWOOD (1920), LTD.—Oil manufacturers. Nominal capital, £100,000 in 30,500 preference shares and 69,500 ordinary shares of £1 each. Directors: To be appointed by subscribers. Qualification of directors, £10. Subscribers: E. H. Barchard, 22, College Hill, E.C.; P. M. Sanderson, 22, College Hill E.C.

G. E. LAWS, LTD., 91, Wolverhampton Road, Heath Town, Wolverhampton.—Chemists and druggists, &c. Nominal capital, £1,000 in 1,000 shares of £1 each. Directors: G. E. Laws, F. W. Laws. Qualification of directors, £1.

H. F. NORMAN & CO., LTD.—Chemists, druggists and drysalter. Nominal capital, £2,000 in 2,000 shares of £1 each. Directors: Mary J. Pirley, 6, Albert Street, Derby; E. T. Aspey, 75, Carlton Road, Derby; J. Allsop, 117, Old Chester Road, Derby; J. D. Metcalfe, Milton, near Derby. Qualification of directors, 100 shares.

UGANDA CONCESSIONS, LTD.—Producing petroleum and other oils. Nominal capital, £6,000 in 6,000 ordinary shares of £1 each. Minimum subscription, 7 shares. Directors: To be appointed by subscribers. Qualification of directors, 25 shares. Remuneration of directors, £50 each: Chairman, £75. Subscribers: H. S. Hex, 35, Bedford Road, East Finchley; A. C. Turvey, 76A, Oaklands Grove, Hammersmith, W.

UNITED KINGDOM OIL CO., LTD., Mark Lane, Station Buildings, E.C. 3.—Oil producers and oil well proprietors and refiners. Nominal capital, £12,500 in 10,000 ordinary shares of £1 each, and 50,000 deferred shares of 1s. each. Directors: G. F. Forwell, Mark Lane, Station Buildings, E.C.; T. Needham, 12, Hyde Park Place, W.; A. Slater, Mark Lane, Station Buildings, E.C.; E. Colson, 11, St. Jame's Avenue, Brighton; J. W. Bell, 23, Rood Lane, E.C. Qualification of directors, 100 shares. Remuneration of directors, £100 each.

UNIVERSAL GLASS CO., LTD., 160, Friar Street, Reading.—Manufacturers of glass. Nominal capital, £12,000 in 7,000 8 per cent. preference shares and 5,000 ordinary shares of £1 each. Directors: A. T. Bate, Constitutional Club, Northumberland Avenue; L. R. A. Bate, 25, Emperor's Gate, Kensington, W. Qualification of directors, 1 share. Remuneration of directors, £250 each.

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Some Features of the Current Issues

AERONAUTICS.

Dinner to the Pioneers of Flight; "Naval Architecture in Aeronautics," by Commander Hunsaker.

THE CABINET MAKER.

(Merchant Shippers' Issue.) "Furniture for Small Houses"; "Openings for Business Abroad"; "Decoration and Furnishing of an Inexpensive Nursery"; "Upholstering Methods and Materials."

THE ELECTRICIAN.

"Thermal Efficiency of the Generating and Use of Gas and Electricity," by Sir Dugald Clerk; "On Cooling Towers," by Professor F. K. Th. van Iterson; "Mass Production of Small Motors."

THE FRUIT-GROWER.

"Railway Rates Inquiry"; "Unity in the Retail Trade"; "Climbing Roses."

THE GAS WORLD.

British Society of Gas Industries on "Labour Problem"; Annual Meeting, Society of French Gas Engineers; Health Ministry's Report on Heating in Housing Schemes.

THE HARDWARE TRADE JOURNAL.

Articles of interest to the merchant, shipper and exporter; "Sheffield as the World's Premier Steel Producer"; "Labour Saving in the Foundry," by Joseph Horner.

WAYS AND MEANS.

"The Go-Slow Life," by The Editor; "Stabilising the Price Level," by Professor Irving Fisher; "Gladstonian Finance," by Samuel Cleave.



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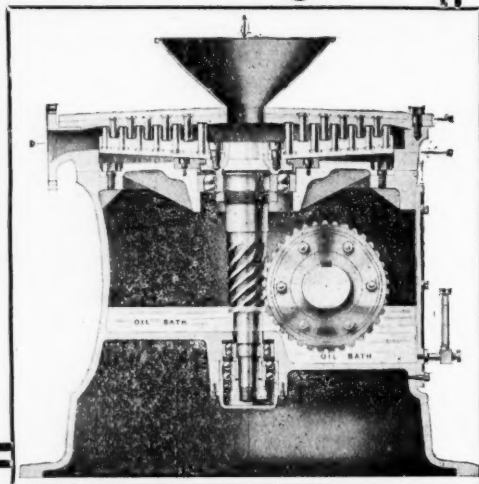
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CONSTRUCTION.

The Buildings are mostly of brick construction with steel roofs, covered slates or Belfast timber roofs, boarded and covered ruberoid. The floors are mainly concrete.

The principal buildings comprise:—

	Ground Area, ft. super.
Offices	1,640
Canteen and Laboratory	1,300
Metal Store	1,000
Three Store Tanks	2,300
Mixing House	3,000
Fitters' Shop	2,300
Furnace House, No. 1	22,000
Furnace House, No. 2	13,000
Transformer Houses	4,200
Bleacher House	4,200
Filter Houses (two)	4,200
Mud Furnaces	4,200
Mixing House	2,000
Store	10,400
Store Shed	16,200

There are various smaller Buildings.

Total ground area of Buildings—about 104,000 ft. super.

LIGHTING & POWER.

Electric from Public Supply.

HEATING.

Steam.

WATER.

From Public Mains.

SIDINGS.

Private Sidings are laid down in the Factory and connect up with the L. & N.W. Railway.

Further particulars and plan may be obtained upon application being made to:—

THE CONTROLLER,

LANDS & FACTORIES SECTION, DISPOSAL BOARD,
Charing Cross Buildings, Embankment,
London, W.C.2.

NOTE.—For particulars of other Government Property for sale see "SURPLUS," Price 3d., at all bookstalls or by quarterly subscription of 2s. post free in the United Kingdom, payable in advance to the Director of Publicity, Ministry of Munitions, Whitehall Place, London, S.W.

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SPECIAL MACHINES FOR GRINDING WASTE MICA and material of similar texture.—Price and particulars from READWIN, 134, High Street, Cheshunt.

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WANTED.—Grinding Mill, suitable for finely powdering nitre cake, 4-5 tons per day; Filter Press Pump, 14 in. delivery, any good make; Condenser, jet or tube, small size.—Offers to Box No. 88, CHEMICAL AGE Office 8, Bouverie Street, E.C.4.

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PATENTS

PATENTS AND DESIGNS ACTS, 1907 & 1919.

MANUFACTURE OF CONCENTRATED NITRIC ACID.

THE PROPRIETORS of British Letters Patent, No. 131,335, of 1918, are prepared to Sell the Patent or to Licence British Manufacturers to work under it. It relates to the manufacture of Concentrated Nitric Acid, by causing an aqueous solution of nitric acid to react with nascent nitric anhydride.

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THE PROPRIETOR of British Patent, No. 25,567/13, dated April 10, 1913, relating to "Improvements in or Relating to the Granulation of Pitch, Resin and the Like," is desirous of entering into arrangements by way of licence or otherwise on reasonable terms for the purpose of exploiting the above patent and ensuring its practical working in Great Britain.—All inquiries to be addressed to B. SINGER, 29, So. La Salle Street, Chicago, Illinois.

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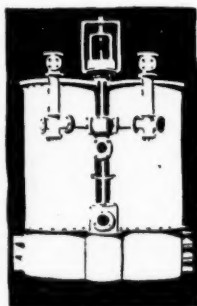
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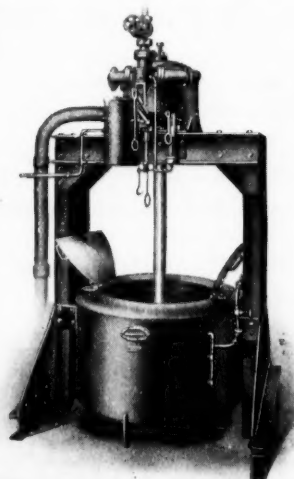
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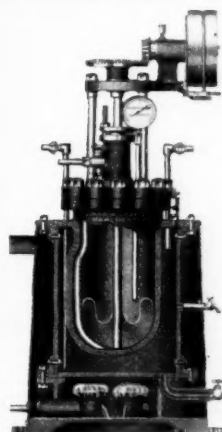
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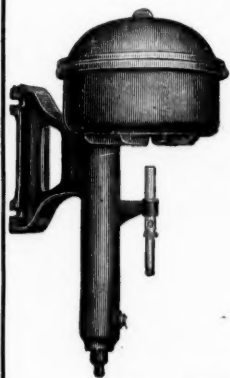
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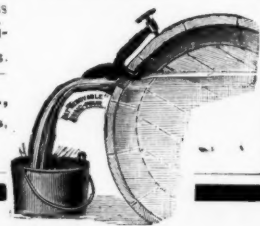
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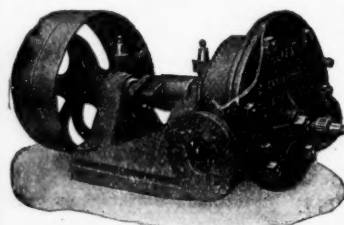
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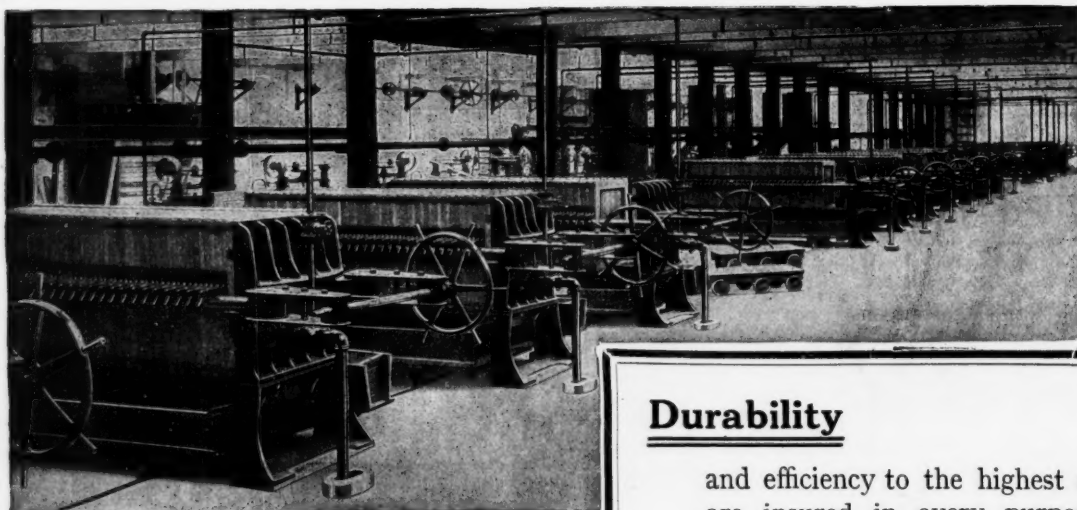
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